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RECREATIONS OF A NATURALIST

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RECREATIONS OF A NATURALIST

BY

JAMES EDMUND HARTING

AUTHOR OF
"A HANDBOOK OF BRITISH BIRDS," "EXTINCT BRITISH ANIMALS,"
"THE ORNITHOLOGY OF SHAKESPEARE,"
ETC., ETC.

WITH EIGHTY-ONE ILLUSTRATIONS

LONDON: T. FISHER UNWIN
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PREFACE

NEARLY three centuries ago it was remarked by Richard Brathwait, in his esteemed and now scarce work, *The English Gentleman*, that recreations might be of two kinds: those which give health and strength to the body, as hunting, hawking and the like, and those which refresh and stimulate the mind, as when recourse is had to the use of books. In a lengthy discourse on this subject, elaborated with much argument and some anecdote, he institutes a comparison between what he terms "exercises of the mind" and "exercises of the faculties of the body." The notion even at that date (1633) was by no means new. The unknown author of that much scarcer book, *The Institucion of a Gentleman*, first printed in 1555, asserted that "good exercise and honeste pastymes doo muche proffyt both to the healthe of man, and recreation of hys wytte;" and after alluding to "hawking and hunting as pastymes used of gentlemen which, in their right kinds, are good and allowable," he

proceeds to quote from Cicero[1] to the effect that indulgence in such sports and pastimes should sometimes give way to graver studies.

The expression of these respectable opinions may not inaptly serve by way of preface to the present volume.

The essays here collected relate both to outdoor and indoor recreations in the sense above indicated, and the author can truly say that while devotion to field sports has afforded him the chiefest pleasure in life, he has sometimes derived almost as much enjoyment—metaphorically speaking—in "finding a hare" in the library, and hunting it through the preserves of ancient authors until the hunt had a happy termination, or the literary hare escaped to give sport another day.

The majority of these essays were contributed at intervals to the Natural History columns of *The Field*, and my acknowledgments are therefore due to the proprietors of that journal for their courtesy in permitting me to reprint them. They may be said to form a second series of a similar collection published some years ago with the title, *Essays on Sport and Natural History.*

In regard to the illustrations, a few words are

[1] "Non ita generati a natura sumus ut ad ludum et jocum facti esse videamur, sed ad severitatem potius, et alia studia graviora."

necessary. While many of them were designed originally for the articles in which they now reappear, several have been supplied from other sources. Those which adorn the "Marsh Walk in May," "Pagham Harbour," and "Bird-life on the Broads," together with "The Cuckoo" and "The Kite" have been borrowed from Johns' *British Birds in their Haunts;* for although that little book was published so many years ago that the copyright has long since expired, the illustrations by the master hand of Joseph Wolf still remain the best of their kind, being veritable portraits of the birds they represent.

For the cuts of the "Egyptian Fowler," the "Mummied Cat," and "Mummy Case," which appear in "The Origin of the Domestic Cat," I have to thank Messrs George Bell & Sons, and to the proprietors of *Country Life* I am particularly indebted for permission to make use of half a dozen illustrations from that journal, which have been reduced in size, and adapted to present requirements.

The "Dead Grouse," the "Kingfisher Hovering," and "The Largest Birds that Fly," (pp. 335-343), have been reproduced from original sketches by Mr George Lodge, while Captain H. Hart Davis has not only permitted the reduction of an appropriate illustration (p. 91) from his *Stalking*

Sketches, but has most kindly furnished an additional cut (p. 89) from an original sketch of his own.

In the production of all these, an effort has been made to supply figures which are not only appropriate to the text, but have the merit of being accurate delineations of the species they are intended to represent.

J. E. HARTING.

WEYBRIDGE,
November 1905.

Recreations of a Naturalist

IN PRAISE OF HAWKING

THERE is an old-world sound in the word "Hawking" which carries one back to the days when every treatise on English field sports, from the *Book of St Albans* onwards, contained a chapter on the art of falconry, and every man according to his social rank had a particular kind of hawk assigned to him. The humbler the falconer the more ignoble was the bird he carried; the most valuable species, often imported at great cost from abroad, being reserved for princes and noblemen, as befitted their position.

To the former class belonged the Kestrel and Sparrow Hawk, to the latter the Falcon gentle, the Goshawk, and the Jerfalcon. So thoroughly smitten were our early kings with the love of hawking as a recreation that stringent laws were passed to protect the eyries, or nests, and fine or imprisonment awaited those who ventured to steal another man's hawk and refused to restore it to its rightful owner.[1] Henry VIII., by an Act passed in the thirty-first year of his reign, made it a felony to

[1] 11 Hen. VII. cap. 17, repealed by 1 & 2 Will. IV. cap. 32.

take the King's nestling falcons or eggs out of the nest, or to capture any of the King's hawks and

THE SPARROW HAWK.

neglect to deliver them within twelve days to one of the royal falconers.[1]

James I. gave great encouragement to field

[1] 31 Hen. VIII. cap. 12, repealed by the Statute Law Revision Act, 1863.

sports, and was particularly fond of hare-hunting with beagles, and hawking. On the latter sport he expended annually a vast amount of time and

THE KESTREL.

money, and was never so pleased as when he had a few of the leading falconers of France to witness some of the wonderful flights at the Kite with Jerfalcons which Sir Thomas Monson provided for him.

All the Stuarts were fond of hawking, but after the Restoration the sport ceased to be popular. The causes which led to its decline were many and various. The disastrous state of the country during the period of the Civil Wars naturally put an end for the time being to the general indulgence in field sports. The inclosure of waste lands, the drainage and cultivation of marshes, the great improvement in firearms, and particularly the introduction of shot, all contributed to lessen the interest once so universally taken in this sport. Fashion, also, had no doubt much to do with the decline of hawking, for so soon as the reigning sovereign ceased to take an interest in the sport, the courtiers and their friends followed suit. Nevertheless, it never entirely died out, and from that time to the present it has not ceased to be practised by at least a few admirers of the old sport in different parts of the country, while during the past twenty years indications have not been wanting of its increasing popularity.

The general public have little opportunity for seeing trained hawks flown, since the "meets" are not advertised as in the case of hounds, and the birds, therefore, are seldom seen, save in transit, by any but the owners and their friends.

One by one the old professional falconers have died out. John Anderson, John Pells, Peter Ballantine, the brothers Barr, Adrian Mollen and John Frost have all passed away, leaving only the traditions of their craft to younger followers, who, deprived of their teaching, have had to learn to

train hawks by personal experiment, and begin *de novo* to discover the secrets of a decadent art. During the past twenty years the practice of hawking in this country has received a great check by the deaths of several notable falconers who, for

A MERLIN.

the greater part of their lives, did much to encourage the old sport and uphold its traditions. Such names as those of Freeman, Salvin, Brodrick, Willimot, Fisher, and the late Lord Lilford, are "household words" with the present generation of falconers, and only those who, like the writer, had the privilege of knowing them all, can fully realise

what a loss to the cause is implied by their decease. Thanks, however, to the active members of the Old Hawking Club, with their skilful falconer, George Oxer, the old sport is still maintained, and a goodly number of Falcons are trained every year to show sport with Rooks on the downs in

THE PEREGRINE FALCON.

early spring, and game in the autumn. Many others might be named who, although not members of the club, follow its example and keep hawks of their own in different parts of the country. Thus the old sport is in no immediate danger of extinction, although it must be confessed that many "signs of the times" are by no means favourable

to its continuance. A wide extent of open country is a *sine quâ non* for flying long-winged hawks such as the Peregrine Falcon and Merlin—and this is becoming every day more and more difficult

A YOUNG GOSHAWK.

to secure. In the woodlands and more enclosed parts of the country they would speedily be lost owing to the height at which they fly, and the ease with which they would pass out of sight, to say nothing of the surrounding covert into which the quarry would dash when pursued, to the disappoint-

ment of the hawks and their owners. But all things in Nature have their appointed places, and in an enclosed country, with proper management, good sport may be obtained with short-winged hawks like the Goshawk and Sparrow Hawk. For these are flown from the fist after the quarry has been flushed, and are not, like the long-winged hawks, cast off to range at a great height before the game is found. The Goshawk by nature will take Rabbits, Hares, Pheasants, Partridges, Wild Ducks and Water-hens, and may be trained to do so for its owner's amusement. The Sparrow Hawk, also, will take young Partridges early in the autumn, but shows the best sport when flying at Blackbirds and Thrushes in the turnip fields to which these birds are in the habit of resorting in autumn.

Hawking, like other field sports, has its proper seasons. In the early spring the falconer trains the long-winged falcons to fly at Rooks, Carrion Crows, and Magpies on the open downs. Towards the end of summer the Merlin affords some pretty flights at mounting Larks.

By the twelfth of August the falcons are once more ready for the moors, and no more beautiful sight can be witnessed than that of a high-couraged Falcon "stooping" downward from an immense height at a fast-flying Grouse and hurling it headlong into the heather. The same bird also in September will make equally short work of the Partridges in a way that is perfectly astonishing to those who are not familiar with the sight. Besides game in autumn, young Wild Ducks may be

killed with the hawks, and afford better sport than "flapper shooting," while rabbits, which, like the poor, "are always with us," afford flights for the Goshawk at any time. Thus it may be said that a man who is fond of Hawks may find something for them to do for the greater part of the year. As to the method of training them, to enter into details would require more space than can be here afforded. Moreover, I have already devoted an entire volume to the subject.[1] Suffice it to state that the principles involved are: first, to make a hawk tame by handling and feeding it, hooding and unhooding it, giving it proper food, and water at intervals to bathe in; secondly, to teach it to come to a lure to be fed, increasing day by day the distance it has to fly, at first with a line attached to the

A HOODED FALCON.

[1] *Hints on the Management of Hawks.* Second Edition, with numerous illustrations. Horace Cox, 1898.

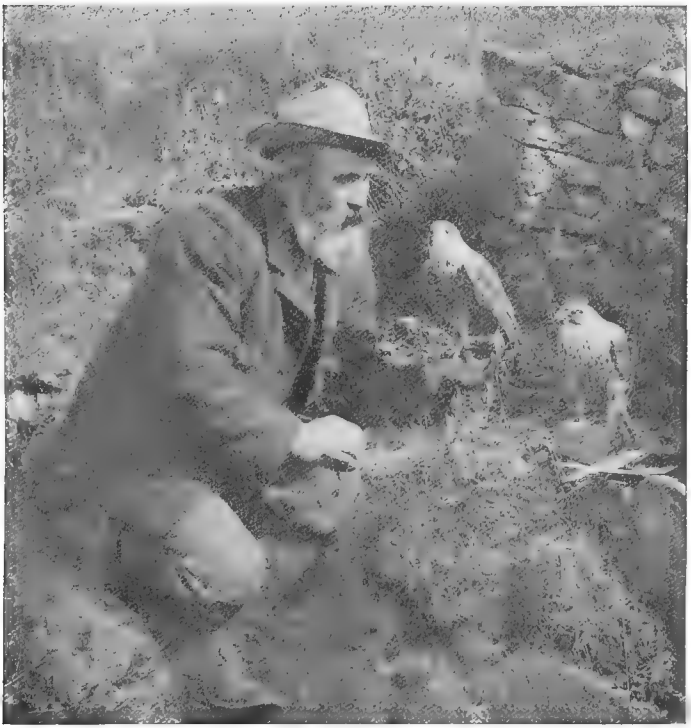
jesses,[1] and then without it; thirdly, to enter the hawk to the particular quarry for which it is intended; and lastly, to fly the bird fasting and reward it for killing, or for coming back to the lure if the quarry should escape.

Here it may be well to add a few remarks upon the charge of cruelty which is sometimes brought against falconers by those who have no acquaintance with the details of the sport. "It is surely very cruel," they say, "to let a poor bird be torn in pieces by a ferocious hawk." The answer is, the poor bird is not torn in pieces, and the hawk is not ferocious, but as gentle and docile as any well-behaved dog that obeys its owner's wishes. It merely exercises its natural instinct by killing prey to appease its hunger, and kills it, moreover, in a very merciful manner. Having struck down with its talons the bird it pursues, it seizes it on the ground with both feet, and while holding it securely, grasps the neck with its beak, jerks it up suddenly with a sharp twist, and thus severs the spinal cord. The bird is, therefore, killed much more mercifully and speedily than often happens when a Pheasant or Partridge has been brought down with a charge of shot, and as a game bird killed by a hawk is always put in the game bag for future consumption by the owner or his friends, it is a mistake to suppose that it is torn in pieces by the hawk. Having seen scores of Grouse and Partridges taken by trained

[1] The light leather straps that are fastened one to each leg, the ends being attached to a swivel.

Falcons, I can speak with some assurance on the subject.

There is unfortunately an element of cruelty in every branch of field sports. Would it were other-



FALCONER AND HAWKS.

wise; but if hawking were to be discountenanced on that score alone, the days of coursing and fox-hunting would likewise have to be numbered. Every true sportsman, who is also a lover of the beautiful in Nature, will avoid causing unnecessary

pain to the dumb creatures which contribute to his sport, while providing him at the same time with wholesome food. Where the cruelty comes in, is in the use of such implements as the "pole trap," now happily prohibited by Act of Parliament, and the iron "gin" employed for taking rabbits and so-called "vermin," which provide no sport of any kind to the user of them, and must inflict intolerable pain.

If in the interests of game preserving hawks are not to be tolerated in the neighbourhood of grouse moors, or partridge manors, it is easy to get rid of them in a more merciful way than by means of an iron trap or a charge of shot. There are several ways of taking them alive and uninjured for the benefit of falconers or bird fanciers, and many a gamekeeper, giving his attention to the subject, would in course of time discover that a live hawk is worth far more to him than a dead one. As many persons profess themselves unable to distinguish one kind of hawk from another, illustrations are here given of the four commoner species which are most likely to be met with, together with the Goshawk which now seldom visits this country, and which, when required by a falconer, has usually to be imported from France or Germany.

A MARSH WALK IN MAY

For real enjoyment of a country walk, much must necessarily depend upon the season at which it is undertaken. In the woodlands, it is true, fresh beauty may be discerned at almost any season of the year, and the glowing, varying tones of autumn are in their own way quite as lovely to contemplate as the pale yet vivid tints of spring. In the marsh, however, it is different, and for many months in the year the landscape presents the appearance of a dreary desolate waste. No trees to break the monotony of the flat and flowerless fields, intersected only by broad dykes, with here and there a footbridge for the shepherds to reach their flocks; the interminable plain stretches on and on till it meets the dim outline of the distant sea-wall, or is lost in an overhanging veil of mist. There are times, indeed, as in the month of November, when the marsh appears perfectly deserted. Not a sound is heard, and there is hardly any sign of life. A few Larks in scattered flocks rise at intervals in front of the intruder, a Reed Bunting or two in the dykes, and here and there, like a dot upon the plain, a Grey Crow may be seen busily employed, perhaps in opening a mussel, or searching for the well-buried larvæ of some beetle.

THE MARSH IN MAY.

Long lines of yellow reeds mark the course of the fen ditches, wherein, if he have luck, the shooter may now and then flush a Snipe, or come suddenly upon a skulking Duck and Mallard—his sole reward for a long dull tramp in search of sport, unless perchance he should have the good fortune to drop upon a covey of Partridges in the dry rushes, and

THE REED BUNTING.

secure a brace before they have placed a dozen dykes between themselves and him. Six months later all is changed, and the naturalist, who for the first time essays a marsh walk, say in Kent, in the month of May, will marvel at the transformation scene presented.

As we step off the dusty road from Rye across the marsh, over which the wind still sweeps keenly

from the sea, we catch sight of a little yellow bird, long and slender, moving rapidly to and fro, snapping at insects as it goes, and pausing after every effort to recover its balance, as it were, by a vigorous up-and-down movement of the tail. This is the Yellow Wagtail (*Motacilla Rayi*), which comes to us in April and departs in September. The breast of the cock bird looks as bright as that of any Canary, the hen, though in close attendance upon her mate, almost escaping detection from the comparative sombreness of her plumage. In point of numbers at this time of year, this little bird may be said to be the commonest in the marsh, scattered pairs coming into view at almost every hundred yards. They make a skilfully concealed nest in a depression of the ground, often upon the bank of a marsh dyke, under shelter of some overhanging tuft, and lay five eggs of a dull clay colour, which at a little distance looks uniform, but which, upon close inspection, is seen to be distributed in fine specks over the surface. So inconspicuous is the nest, that, unless the birds are watched to or from it, an hour's search for it might prove unavailing.

The common Pied Wagtail, so familiar by the village pond side, is seldom seen upon the marsh in May, not more than one pair for every hundred of the yellow bird being visible. It appears to prefer the neighbourhood of man's dwelling, often building its nest in ivy close to the house, and laying a somewhat larger, whiter-looking egg, albeit it is minutely freckled with grey.

Wherever the ground is hillocky, affording room

for temporary concealment, the Wheatear suddenly appears and disappears. He is a timorous bird, easily alarmed ; and on the warrens which he most loves to frequent, he will often take refuge in a rabbit burrow.

Some birds appear commoner in the marshes in August and September, after the young are hatched,

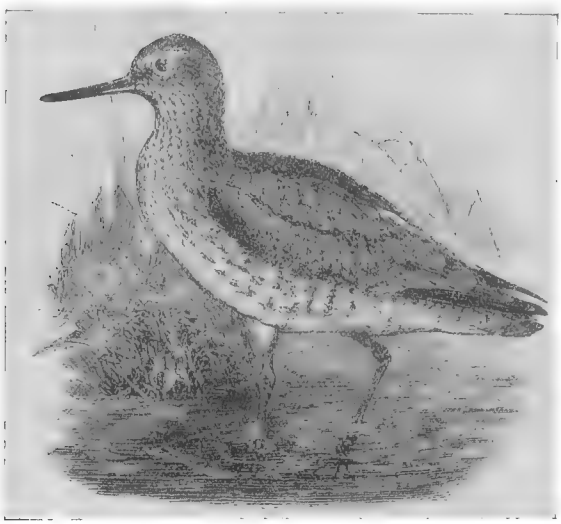
THE YELLOW WAGTAIL.

than they do in May. The Meadow Pipit is one of these. During the first week of September, when in pursuit of Partridges, we may often see scores of these little birds on the marsh, jumping up at intervals almost under our feet, and hurrying off with a spasmodic, jerky flight and sharp twittering note. In May, however, only a few scattered pairs are to be observed on the marsh, the majority having gone further inland for the breeding season.

As we come to an angle of a dyke, where the winter floods have scooped out a little bay and left a small shelving bank of mud, we disturb a pair of Summer Snipe (*Totanus hypoleucus*), which go skimming away down the dyke uttering a sharp "weet, weet, weet." They too are only passing visitors, and do not breed here. We have found their nests, with four pear-shaped handsomely marked eggs, by the moorland streams in Northumberland, Durham, and North Wales, but never heard of their breeding in a south-country marsh. They can swim and dive well on an emergency, especially if shot at and wounded, or if pursued by a hawk. Hawks, by the way, are not common in the marshes in May, being away nesting either in the woods inland, or in the nearest sea cliffs many miles off. An occasional Kestrel, however, may be seen hovering over the marsh in search of food, intent probably in watching for the reappearance of a water-rat upon a dyke bank or the more easily captured Short-tailed Meadow Vole (*Arvicola agrestis*). In winter the Merlin makes its appearance, and has a good time of it amongst the Larks and Meadow Pipits, occasionally trying conclusions, not unsuccessfully, with a Snipe.

But the birds which of all others possess the greatest interest for us in May are those which resort to the marsh for breeding—the Peewit, the Redshank, the Black-headed Gull. The Peewit, at all times wary and suspicious, is especially so in the breeding season, and rises with loud cries while we are yet a long way from its nest. Flying round and

round, and at times coming right overhead within shot, it endeavours by every artifice to divert our attention and lead us away from the spot where its eggs or young are lying. The ground is still very bare, and there is little or no nest; the eggs are therefore not very hard to find, if the birds are first watched from a distance. Those who make a



THE REDSHANK.

business of collecting "Plovers' eggs" for the market, and whose eyes are well trained to the work, have a wonderful knack of marking the precise position of a nest from a distance after watching the birds, and walking straight to it. To do this, however, requires some practice; the eye must be steadfastly kept upon the spot once marked, heedless of all the attempted distractions

by the parent bird. Amidst the sharp and prolonged "pee-wit" uttered by some half dozen pairs around us on the wing, we hear the very different and more musical note of the Redshank—"teeou-too, teeou-too-too"—and soon catch sight of one topping a reed bed and flying, not unlike a Snipe, away from the intruder As we proceed, another and another starts up, one of which, hovering over a post-and-rail fence, descends lightly on the top of one of the posts, where it remains for some seconds curtseying and nodding in all directions, until, at our continued approach, it again takes wing, and for a time disappears from view. The sight of so many in this particular part of the marsh fills us with the expectation and hope of finding a nest, and we have not far to search before discovering three, distinguishable from those of the Peewit by having rather more materials, more neatly put together. The eggs to the unwary are sufficiently like "Plovers' eggs" to do duty for them in a basketful, but they are really smaller, more pointed at the narrow end, with a paler ground colour blotched with reddish-brown instead of black. Four is the full complement, and, when these are laid and incubation has fairly commenced, the birds become very noisy on being disturbed, and very reluctant to leave the spot, flying round and round the intruder, like Lapwings.

The old English name of "Pool Snipe" bestowed upon the Redshank is a most appropriate one, for it is one of the most characteristic ornaments of a marsh pool in May. In autumn, when the young

are strong on the wing, and both young and old assemble in flocks, they betake themselves to the coast, where, in the harbours at low water, or on the sands during an ebbing tide, they may be seen busily feeding on small mollusca, fish, and shrimps, of which they seem very fond, but which impart a strong, disagreeable flavour to the bird when cooked. For this reason Redshanks, if wanted for the table (and they are excellent eating), should be always secured before they get down to the salt water. They are then as good as Snipe. The same remark applies to the Curlew, which breeds upon the moors and comes down to the coast in autumn. According to the old distich,

> "A Curlew, be she white or black,
> Carries twelve pence on her back,"

referring to the market value of a bird which was formerly much esteemed for the table. It is not unlikely that the "Black Curlew" may have been the Glossy Ibis, which has a Curlew-like bill, and which, before the drainage of the great fens in Lincolnshire, Norfolk, Cambridge, and Huntingdon, was more frequently met with than at the present day. Lubbock, in his *Fauna of Norfolk*, written in 1845, says: "Fifty years back the Glossy Ibis was seen often enough to be known to gunners and fishermen as the Black Curlew."

Following the straight course of a long dyke, wherein a yellow fringe of last year's reeds uncut afford shelter to several Reed Warblers (which, however, have not yet commenced to build), we are

led to a large shallow pool, so completely covered with growing reeds, already a foot above the surface, that at a little distance it might be supposed to be *terra firma*. The water, however, is a foot or two deep, in some places more, and it is a treacherous place to walk through. As we approach, several Black-headed Gulls, which till

THE BLACK-HEADED GULL.

then had been sitting concealed upon their nests, rise above the reed tops, and come flying towards us with angry cries, irritated at the invasion of their breeding quarters. But we are not maliciously disposed. We shall merely wade out into the reed bed and look at the nests, taking an egg here and there which may strike us as being particularly handsome, to add to a collection which already contains many a souvenir of a summer day's ramble.

Hardly do we set foot within the Gulls' sanctuary than a scene of much temporary confusion ensues. Gulls in numbers rise before us; Coots and Moorhens scuttle away in all directions; a fine old Mallard springs into the air, and a splash of wings succeeded by a dive shows us where the Duck has just disappeared, leaving a tiny brood of young but lately hatched to save themselves by hiding amongst the sprouting reeds. From the far end of the pool a great grey Heron slowly gets upon the wing, and with an awkward flapping flight sails out over the marsh. Another joins him just beyond, and the two eventually drop into a distant dyke, where they are lost to view.

It is a wonderfully beautiful and animated scene, as we stand knee-deep in water, to contemplate it. The birds are not to be persuaded of our peaceful intentions, but continue to circle over and around us with noisy cries. The Coots pass and repass us within gunshot; the Gulls hover overhead; the Peewits, though keeping over the drier portions of the marsh, continue to make themselves seen and heard; and the Reed Warblers chatter incessantly, while every now and then a Redshank dashes by, waking the echoes of the wild waste with its fine loud notes of warning.

We need not long remain here, for we have no wish unnecessarily to alarm the birds, and, moreover, the water is cold. Picking up an egg here and there of Coot, Gull, and Moorhen, we make for *terra firma*, and continue on our way across the marsh.

We are yet some way from the sea, but it is still possible to reach the great shingle beach which looms in the distance, and towards this we turn our steps, hoping when we get there to add several fresh species to the list of birds already noted. On our way we unexpectedly come upon some Whimbrel feeding out in the marsh. Not unlike a Curlew, though smaller in size, this bird in Sussex is called "Titterel" from its note, and in Norfolk is known as "Maybird," from the regularity of its appearance in that month, when on its migration northwards to its breeding grounds. In the autumn, when the young birds return in small flocks, they are pretty tame, and may be easily approached or whistled round within gunshot; but the old birds going north in spring are more wary, and can only be approached by careful stalking. In the present instance we only see and hear enough to enable us to identify the species, and the birds are soon out of sight.

Just before reaching the sea beach, we note some Curlews feeding out in a marsh amongst the sheep, and they seem pretty tame until we stop to bring our field-glasses upon them, when they hurriedly take wing towards the sea, and are soon lost to view.

Hardly do we set foot upon the shingle when a pair of Ringed Plovers rise close before us, and by their noisy cries, as they fly round us in circles, seem to intimate that they have eggs near at hand. A somewhat hasty search, however, fails to reveal them, and we leave the Plovers in undisturbed

possession. Where the shingle borders the marsh farm, large patches of furze abound, now in full golden bloom; and while we are speculating upon the expected appearance of the Stonechat, a hen Partridge gets up with much fuss and clamour, and is shortly joined by the cock bird, who has run forward a few yards on hearing us approach. There is evidently a nest at hand in the furze; but we do not waste time in looking for it, for it is four o'clock, and we are a long way from home. The sight of white wings in the distance, amidst which we note a Black-backed Gull, leads us on some way further over the beach; but the Gulls retire as we approach, and we make no better acquaintance with them.

On our way home across the marsh we catch sight of a Dabchick, or Little Grebe, in one of the dykes, and add a few more species, somewhat unexpectedly, to our list of birds noted. Amongst others we see three Cuckoos, two of them flying in company. Were they late arrivals just coming in from sea? or had they been visiting the reed beds to see if any Reed Warblers' nests were yet ready to receive their eggs?

About one of the marsh farms (the only spots on the marsh where any trees are to be found) a solitary pair of Mistle Thrushes fly round with their well-known noisy screech. Starlings and Sparrows are busy carrying food to their young, and on the nearest dyke bank a fine Reed Bunting, with jet black head and white collar, displays himself to great advantage.

Gradually, as the sun nears the horizon, and the failing light betokens the lateness of the hour, a solemn stillness reigns over the marsh. The noisy cries of the Peewits are no longer heard, the Redshanks are silent, and the Gulls have settled down again upon their nests. A dull mist begins to rise, and in another hour will have hidden from view the landscape, with all its bird life, which but lately we so much admired.

THE WHEATEAR ON THE SOUTH DOWNS

AMONGST the good things of Sussex enumerated by John Ray in his *English Proverbs* (ed. 1742, p. 262), we find mention made of a "Bourn Wheatear." The usually accepted version credits Sussex with the production of four delicacies, which, according to Izaak Walton, were stated to be, in 1653, a Selsea cockle, a Chichester lobster, an Arundel mullet, and an Amberley trout. Ray, however, enumerates seven, the other three being a Pulborough eel, a Rye herring, and a Bourn Wheatear, which he says "are the best in their kind, understand it of those that are taken in this country." By a "Bourn Wheatear" we are to understand a Wheatear taken on the downs near Eastbourne by a device, presently to be described, which was much in vogue with the Southdown shepherds at the end of the eighteenth and beginning of the nineteenth century.

"Wheatears" says Fuller, writing of Sussex, in 1662, somewhat before the publication of Ray's *Proverbs*, "is a bird peculiar to this county—hardly found out of it. It is so called because fattest when wheat is ripe, whereon it feeds; being no bigger than a Lark, which it equalleth in the

fineness of the flesh, and far exceedeth in the fatness thereof. The worst is, that being only seasonable in the heat of summer, and naturally larded with lumps of fat, it is soon subject to corrupt, so that (though abounding within forty miles) London poulterers have no mind to meddle with them, which no care in carriage can keep from putrefaction. That palate-man [1] shall pass in silence who, being seriously demanded his judgment concerning the abilities of a great lord, concluded him a man of very weak parts because he saw him at a great feast feed on Chickens when there were Wheatears on the table."—*Worthies of England*, vol. ii. p. 382.

This account, having been written more than two centuries ago, when little or nothing was known of the habits of our migratory birds, is, as might be expected, not altogether free from errors. In supposing the Wheatear to be hardly found out of the county of Sussex, Fuller seems to have considered it a resident species, whereas, as we now know, it is a summer migrant, arriving towards the end of March, and departing in September. His statement that it feeds on wheat must have been a pure conjecture, arising from a guess at the meaning of its name, for, so far from being found in the neighbourhood of cornfields, its haunts are on the wide, open downs, fallow fields, and sandy warrens, where its diet consists of insects and their larvæ, and small thin-shelled mollusca.

The suggestion that the Wheatear is so called "because fattest when wheat is ripe" sounds

[1] *Cf.* Willughby, *Ornithology*, 1678, *s.v.* "Partridge."

plausible enough, though it is far from the truth, the fact being that our Saxon forefathers gave it a name (as they did to the Redstart, *i.e.*, Red-tail; and Wagtail, of which Wag-start is the older form) from a very noticeable peculiarity, namely its white rump, which is so conspicuous when the bird is in motion. It is, in fact, a corrupted form of the older word "wheatears" for "white-ears" (from the Anglo-Saxon *hvit* and *ears*, the tail, or rump), which was mistaken for a plural. That this is the true explanation, as long ago pointed out by the present writer (*Field*, April 1, 1871), there can be no doubt.

In the third letter of Smollett's *Travels through France and Italy* (1766) we find the remark:—

"There is . . . great plenty of the birds so much admired at Tunbridge under the name of 'Wheatears.' By the bye, this is a pleasant corruption of the translation of their French name *Cul-blanc*, taken from their colour, for they are actually white towards the tail."

Bishop Mant, also, in his *British Months*, writes:—

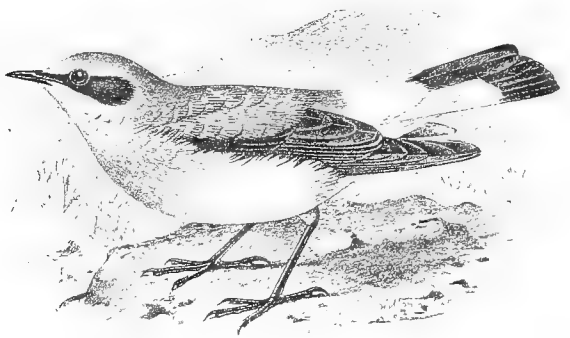
> "Fain would I see the Wheatear show
> On the dark sward his rump of snow
> Of spotless brightness."

Thus we have excellent authority for this interpretation, which is confirmed by the names "White-rump" and "White-tail," which are still applied to this bird in different parts of the country.

The abundance of Wheatears at certain seasons on the downs of Hampshire and Sussex was noticed by Gilbert White in a letter to the Hon. Daines

Barrington in December 1773, and the number of these birds which used to be taken years ago upon the South Downs in autumn was a matter of notoriety.

"Hereabouts," says an old chronicle of Eastbourne, "is the chief place for catching the delicious birds called Wheatears, which much resemble the French Ortolans," and they have played an important part in the history of this town. Squire



THE WHEATEAR.

William Wilson, of Hitchin, Lord of the Manor of Eastbourne, was in Oliver Cromwell's time vehemently suspected of loyalty to the Stuarts, and one Lieut. Hopkins with a troop of dragoons swooped down into Eastbourne to search the squire's house, and, if needful, to arrest him as a malignant. The squire was laid up with the gout, but Mistress Wilson, his true wife, with the rarely failing shrewdness of her sex, at once placed before Lieut. Hopkins and his troopers a prodigious pie filled with Wheatears, which rare repast, the chronicle

goes on to say, the soldiers did taste with so much amazement, delight, and jollity, that the squire upstairs had ample time to burn all the papers that would compromise him; and when Lieut. Hopkins, full of Wheatear pie, came to search the house, there was not so much treasonable matter found as could have brought a mouse within the perils of a *præmunire*. At the Restoration, the lord of the manor became Sir William Wilson, of Eastbourne, a dignity well earned by his devotion to the royal cause; but the chronicle goes on to hint that Charles II. was passionately fond of Wheatears, and that possibly the liberality of the squire in supplying his Majesty's table with these delicacies may have had something to do with the creation of the baronetcy.

Gilbert White, in one of his letters to Pennant, wrote: "Some Wheatears continue with us the winter through;" but Sir William Jardine, in a foot-note to his edition of White's *Selborne*, conjectured that on this point he was mistaken. He perhaps thought that some had remained throughout the winter, from having seen them in March on their earliest arrival in spring. Writing to Daines Barrington in December 1773 (Letter xvii.), and describing a journey over the downs from Selborne in Hants to Ringmer in Sussex, he remarked:—

"Notwithstanding all my care, I saw nothing like a summer bird of passage; and, what is more strange, not one Wheatear, though they abound so in the autumn as to be a considerable perquisite to the shepherds that take them; and though many

are to be seen to my knowledge all the winter through in many parts of the south of England. The most intelligent shepherds tell me that some few of these birds appear on the downs in March, and then withdraw to breed, probably in warrens and stone quarries. Now and then a nest is ploughed up in a fallow on the downs under a furrow, but it is thought a rarity. At the time of wheat harvest they begin to be taken in great numbers, are sent for sale in vast quantities to Brighthelmstone and Tunbridge, and appear at the tables of all the gentry that entertain with any degree of elegance. About Michaelmas they retire, and are seen no more till March. Though these birds are when in season in great plenty on the South Downs round Lewes, yet at Eastbourne, which is the eastern extremity of those downs, they abound much more. One thing is very remarkable —that though in the height of the season so many hundreds of dozens are taken, yet they never are seen to flock, and it is a rare thing to see more than three or four at a time, so that there must be a perpetual flitting and constant progressive succession."

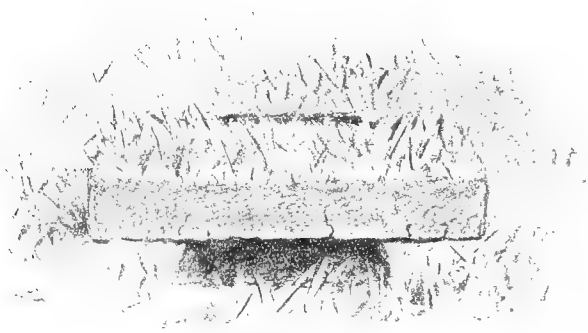
He concludes with an observation, which at the present day seems to require some correction, namely :—

"It does not appear that any Wheatears are taken to the westward of Houghton Bridge, which stands on the river Arun."

This is a mistake. We have frequently seen Wheatears in spring on the downs above Chichester,

and in autumn on the low-lying ground between Bognor and Selsea Bill. Many pairs breed annually on the South downs, near Uppark, in the parish of Harting, which is within a few miles of the borders of Hants, and not very far from Selborne.

The method of catching Wheatears adopted by the Southdown shepherds while tending their flocks was as simple as it was effectual. It appears also to be of some antiquity. Willughby, in 1676,



TRAP FOR WHEATEAR.

described it in his *Ornithologia*, which two years later was translated by his friend Ray. The passage in the English version (p. 233) runs thus:—

"The Sussex shepherds to catch these birds, use this art. They dig long turves of earth and lay them across the holes whereout they were digged, and about the middle of them hang snares made of horse hair. The birds being naturally very timorous if a Hawk happens to appear, or but a cloud pass over and intercept the sunbeams, hastily run to hide themselves in the holes under the turves, and so are

caught by the neck in the snares. Upon the downs of Sussex, which are a ridge of mountains running all along by the sea coast for thirty or forty miles in length, they are taken yearly in great numbers in harvest time or the beginning of autumn, where for their fatness and delicate relish they are highly prized."

Macky, in his *Journey through England*, 1732 (i. 125), has thus referred to the Sussex Wheatears :—

"I lay at a pretty village called Eastborn and supp'd upon some little birds call'd *Wheatears*, resembling our *Ortolans*. This is the chief place where these birds are taken. I had the pleasure of going out the next morning a-catching of them with a shepherd, and took two dozen for a breakfast. The manner of catching them is very particular; they cut a turf of about a foot long and half a foot deep, and turn the turf to cover the hole, in which they put a snare of horse hair, and the birds, being very shy, on the approach of any one, running into these holes for shelter, are taken."

Gilbert White's correspondent, William Markwick, who lived at Catsfield, near Battle, about five miles from the sea, contributed a useful "Catalogue of Birds found in the County of Sussex" to the *Transactions of the Linnean Society* in May 1795. In this Catalogue he notices the Wheatears as being "found in great plenty on our South Downs," and after referring to the traps used by the shepherds for capturing them, described as horse-hair nooses placed under a sod of turf dug out of the ground

for that purpose, adds the following remarks: "They are first set up every year on St James's Day, the 25th of July, soon after which time they are caught in numbers truly astonishing. . . . Observing that all the birds which were caught in the proper season had the same coloured plumage as the hen bird, I made some inquiries respecting them of a shepherd at East Bourn, who informed me that the flight consisted chiefly of young birds, which arrived in the greatest numbers when westerly wind prevailed, and that they always came against the wind. He told me that on the 15th and 16th of August 1792, he caught twenty-seven dozen with only a few old birds amongst them; but this is a small number when compared with the almost incredible quantity sometimes taken. A gentleman informed me that his father's shepherd once caught eighty-four dozen in a day." Even a greater number than this must have fallen to the share of a shepherd remembered by a friend of the late Mr M. A. Lower. This man, after having filled a large bag and his wife's apron with the game, was fain to take off his round smock and to fasten the neck and sleeves of that rustic garment by way of sack, which he filled to repletion with his delicious victims (Lower, *Contributions to Literature*, p. 153). It was formerly a common practice for wayfarers on coming to a Wheatear trap to take out the bird and to leave a penny as a *quid pro quo*.

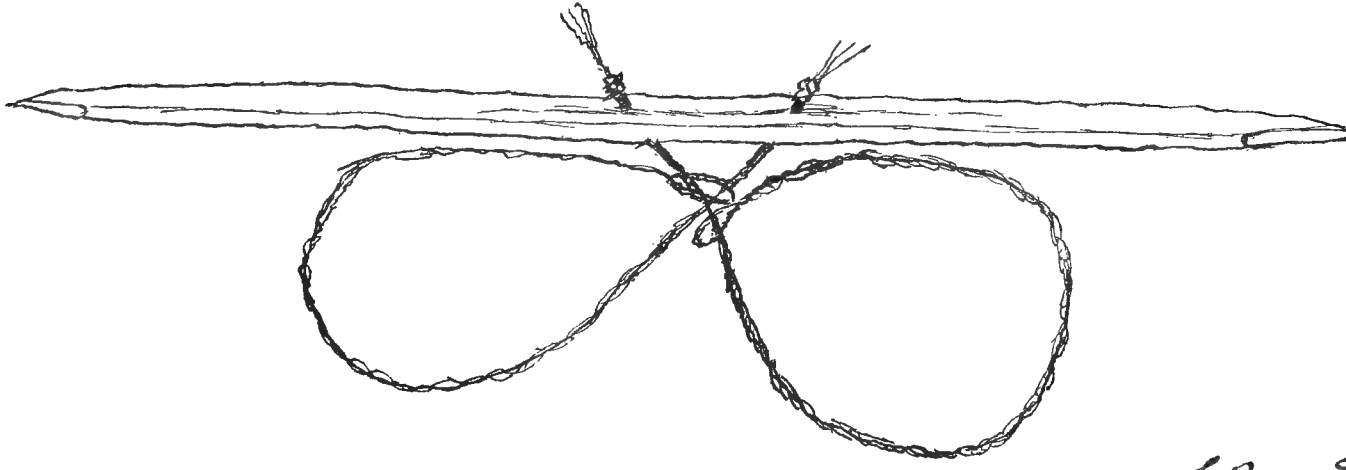
The late Rev. Leonard Blomefield (formerly Jenyns), who died in September 1893, at the advanced age of ninety-three, and whose *Manual*

of British Vertebrate Animals, published in 1835, is even now a useful book of reference, has left behind him a pleasing reminiscence of the "Bourn Wheatears." In a little memoir of his friend William Yarrell, who died in 1856, printed for private distribution only, he wrote in 1885 :—

"One summer, I think it must have been about 1831, Yarrell and myself, being full of the subject of British fishes, agreed upon a trip to the south coast to see what novelties we could get there, or specimens in further illustration of the materials we had already got together for our respective works. . . . One afternoon during our stay at Eastbourne we strolled on to the downs, and had a long chat with one of the shepherd boys who—while the season lasts—make a rich harvest by catching Wheatears for the table. It was then just the time (September), and the birds were beginning to collect in large numbers on the downs previous to migration. We were greatly amused at the boy's eagerness for the sport. His whole soul was wrapt up in it—even to the imagining, in his simplicity, that one purpose for which Parliament met was to determine the exact day when Wheatear catching should begin. I remember giving him twopence for one of his snares, which I have by me still. Of course, we had Wheatears for dinner that day, and being the choice dish of the place, which Eastbourne cooks know very well how to prepare, they were deliciously served up."

Of this snare, bought from a Sussex shepherd, Mr Blomefield afterwards sent me a sketch of the

Wheatear trap had from a Shepherd boy
Employed in catching the birds on the downs
at Eastbourne — Sept.— about 1831. —



SNARE FOR WHEATEAR.

L. Blomfield.

natural size, with an inscription in his own handwriting, of which a facsimile is here given.

It will be seen that by inserting this contrivance in the opening which has been cut in the ground immediately under the turf which is laid across the hole thus made, a double horse-hair snare is set in such a manner that a Wheatear passing under the sod cannot escape being caught.

One of the last of the old race of Southdown shepherds was John Dudeney, of Plumpton—a man so remarkable in his way that he was thought deserving of mention in Lower's *Sussex Worthies*. Although following so humble an avocation, he by no means neglected education, but found time and opportunity to learn geography, mathematics, and even French. His acquirements at length placed him so much above his station that he was prevailed upon to give up the care of sheep, and, obtaining a situation in the printing office of Mr Baxter, of Lewes, he lived to impart information to hundreds of Sussex folk who, without his assistance, would have received no education of any kind. He was one of the founders of the Mechanics' Institute at Lewes, where he used to give lectures, and continued his tuition until within a few weeks of his death, which occurred in May 1852, in the seventieth year of his age. His biographer tells us that :—

"All his youthful savings were expended in the purchase of books. His wages were six pounds a year, and perquisites were derived from his master allowing him to keep a sheep (whose lamb and

wool brought him about fifteen shillings a year) and from the capture of Wheatears—the English Ortolan —then much more abundant on the downs than now."

In a communication which he made at an advanced period of his life to Mr R. W. Blencowe, he said :—

"At midsummer 1802 I went to be head shepherd to Mr James Ingram of Rottingdean. The farm was called the Westside Farm, extending from Rottingdean to Blackrock in Brighton parish ; it was a long narrow strip of ground, not averaging more than half a mile in width, and extending along the sea coast. I caught great numbers of Wheatears during the season for taking them, which lasts from the middle of July to the end of August. The most I ever caught in one day was thirteen dozen ; but we thought it a good day if we caught three or four dozen. We sold them to a poulterer at Brighton, who took all we could catch in the season at eighteenpence a dozen. From what I have heard from old shepherds it cannot be doubted that they were caught in much greater numbers a century ago than of late. I have heard them speak of an immense number being taken in one day by a shepherd at East Dean, near Beachy Head. I think they said he took nearly one hundred dozen ; so many that he could not thread them on crow quills in the usual manner, but took off his round frock and made a sack of it to put them into, and his wife did the same with her petticoat. This must have happened when

there was a great flight. Their numbers now are so decreased that some shepherds do not set up any coops, as it does not pay for the trouble."[1]

Lower, in his *Contributions to Literature*, 1854, remarks (p. 153): "The Wheatear is becoming much less numerous than heretofore, to the great loss of the shepherds. The T-shaped incisions or traps in the turf are still seen, however, at the proper season, and many a timid, inoffensive bird still subjects itself to capital punishment in the horse-hair nooseinsidiously concealed therein.

[1] Fleet, *Glimpses of our Ancestors in Sussex*, p. 94.

PAGHAM HARBOUR PAST AND PRESENT

In the south-western corner of the long county of Sussex, and on the eastern side of the great promontory or headland known as Selsea Bill, there existed until 1887 one of the most attractive harbours for wildfowl to be found in the south of England. Formed originally by an incursion of the sea at the weakest portion of the long shingle beach which for ages kept back the water from the low-lying inland marshes, it furnished, in its wide waste of 3000 acres, the most important requisites of food, shelter, and comparative quiet, which are so essential to the presence of wildfowl. Localities which do not offer these attractions never hold birds long. They come, it is true, with wonderful regularity at the usual periods of their migration; but, after a few days' rest, they again journey onwards in search of those conditions which are so essential to their comfort. With no railway stations nearer than Bognor or Chichester—both of them some five miles distant—Pagham Harbour lay sufficiently off the beaten track to be out of the way of ordinary tourists, and, strange to say, was known to few beyond the professional gunners and fishermen dwelling about Bognor, Pagham, Siddlesham, and Selsea. Nor were these by any means a numerous

class, for the surrounding district was too sparsely populated to furnish many punts or guns even in the height of the wildfowl season, the result being that the birds were never unduly disturbed, or if for the time being they were much shot at, the survivors,

THE CURLEW.

with fresh accessions to their ranks, were sure to come back with the turn of the tide. One great advantage which this fine harbour possessed was that it was too shallow to be navigable except by small craft, fishing boats, and punts, which were never numerous. At ebb tide an enormous extent of mud flats was laid bare, intersected by creeks and

channels of no great depth, and for the most part only just wide enough to work a gunning punt in. On these "muds," as they were locally termed, in spring and autumn, when the tide was out, flocks of Gulls and Sandpipers might be seen scattered about in all directions, gleaning hastily the harvest of the sea. Ringed Plovers (locally called "Wide-awakes") and Dunling (or "Oxbird") were as common as Sparrows in a farmyard. The musical notes of the Redshank and the weird cry of the Curlew might be heard all day long at intervals, sounding wild and melancholy over the dreary waste of mud and water, and agreeably relieving the otherwise monotonous silence which prevailed. Although most numerous in spring and autumn, when they received great accessions to their ranks from the migrating flocks which continually joined them, these birds might be seen there all the year round, as might also, in smaller numbers, the Knot (*Tringa canutus*), locally known as the "Little Plover," the Bar-tailed Godwit or "Strant," the Turnstone or "Shell-turner," and the Oyster-catcher or "Olive." Other species appeared for a few week only in spring and autumn. In May the Whimbrel (*Numenius phæopus*), known in Sussex as the "Titterel" from its cry, and in Norfolk as the Maybird, from the regularity of its appearance in that month, was for a brief period quite numerous. About the same time of year came the Knot, the Curlew Sandpiper (*Tringa subarquata*), and the Bar-tailed Godwits, with their speckled backs and bright bay breasts, which characterise the plumage

of the breeding season. The longer legged Black-tailed Godwit or "Broad-tailed Strant" was a much scarcer bird, and never came in such large parties as he of the barred tail. This seemed strange, for the black-tailed bird is the one which used to breed in the English fens, and still nests in the marshes of Holland—from which circumstance it might be

THE DUNLING.

expected to visit us more frequently and in larger numbers than is found to be the case, the Bar-tailed Godwit having to reach and return from its breeding haunts, which lie beyond lat. 60° N. in Finland, Northern Russia, and Siberia. All these birds were more numerous in the autumn, when the bulk of the flocks consisted of young birds, distinguishable by their shorter and weaker bills, and by their buff-coloured breasts.

With the Godwits and Knots in May came also a few Grey Plovers, never in large flocks, but in small parties of ten or a dozen. At this time of year they were exceedingly handsome; their breasts jet black, their backs looking as if flakes of snow had fallen upon them as they slept at night, their dark heads being similarly whitened here and there

THE SANDERLING.

in patches. On the wing they were at once distinguishable, not only by their chequered appearance (the black breast and axillary plumes contrasting finely with the snow-white under surface of the wing), but also by their loud and plaintive dissyllabic call, uttered at intervals as they flew.

In the main channel, as it was called, which wound tortuously from the harbour's mouth to its north-east corner, where lay the little village of Siddlesham, large black posts were set at intervals

to mark the deep water, and prevent such vessels as essayed to reach Siddlesham from getting stranded on the mud. These great square-headed posts formed most convenient resting-places for Cormorants, Terns, and perhaps, on rare occasions, an Osprey.

It was a pretty sight to watch a Cormorant fishing as the tide went out, when, after getting his fill, he would mount on one of these posts, and there sit for half an hour or more with expanded wings, hung out to dry in the breeze. Sometimes three or four Terns, or Sea-swallows, would contend for possession of the same post, and, after jostling each other for some time with noisy cries, would fly off to the next post, where perhaps the same manœuvres would be repeated.

During the months of August and September, when the young Gulls and Terns were well on the wing, there would sometimes be hundreds of these birds in the harbour. The professional gunners used to shoot them when they got a chance, in order to dispose of them in Chichester either to the poulterer or birdstuffer, and they found their way eventually either to the *plumassier*, or to some public or private collection of British birds. All the commoner species of Gulls were usually represented, except perhaps the so-called Common Gull (*Larus canus*), which was by no means numerous. But Kittiwakes (especially young birds in autumn), Black-headed Gulls, Greater and Lesser Black-backs, and Herring Gulls, in all stages of plumage, were plentiful enough. Occasionally an immature

PUNTS ASHORE.

Little Gull would be brought in by a gunner, and in hard weather a great Glaucous Gull would come into the harbour, accompanied perhaps by a few Skuas and Petrels. But these never stayed long, and, if not shot at and killed, drifted away like restless spirits over the beach and away seaward. Now and again some solitary belated Guillemot or Razorbill would put in an appearance, and might be observed diving in one of the channels as the tide ran out, but these "cliff-birds" did not often come far up the harbour; they were more often to be seen on the seaward side of the shingle beach, and generally some little way out from shore. I seldom paid much regard to these birds, except just to note their species and watch them fishing when a good opportunity occurred. It was to the Plovers, Curlews, Redshanks, Godwits, Knots, *et id genus omne*, that I paid most attention in autumn, and to Ducks and Black Geese in the winter months I devoted many a long and often successful day.

The extensive marshes lying to the westward of Pagham Harbour, between Siddlesham and Selsea, are intersected, as such marshes usually are, by broad dykes to help the drainage, and keep in the cattle which grazed there. Times have changed, but thirty years ago these marshes were seldom visited by any but those who looked after the stock. The birds which resorted there were consequently very little disturbed, and it was possible to make a very nice little "mixed bag" if one happened to hit off the proper season.

Duck and Mallard, and Teal were often in the

dykes, with an occasional Goldeneye—generally single birds, females, or young males—Little Grebes, and now and then in winter the Sclavonian and Eared Grebes, almost always solitary. Snipes of course were scattered about, and had to be looked for; Green Sandpipers and Grey Phalaropes I repeatedly saw and shot. At high tide Golden

THE TURNSTONE.

Plovers and Peewits rested in the marshes; at low water they betook themselves to the harbour to feed upon the recently exposed ooze, and it was remarkable how well they appeared to know when the tide had turned. As soon as the highest mud-banks began to show above the receding water, they rose in a body from the marsh, and were off to feed upon the ooze. The Peewits were generally too artful, and flew in too straggling a flock, to afford much

chance to the gun, but the Golden Plovers came sweeping along in a more compact body, and, by lying in wait for them behind the harbour wall, in a direct line between their position in the marshes and the highest mud-flats, I often managed to get two barrels in very effectively as they crossed, dropping perhaps seven or eight of them, and, on one well-remembered occasion, "a baker's dozen." They were generally in capital condition, and made a welcome addition to the very limited "bill of fare" which such an out-of-the-way place afforded.

The little village of Siddlesham was, and still is, a very primitive place indeed. A few small straggling houses, fewer shops—including those of a butcher, baker, and general grocer—a mill, and an inn rejoicing in the sign of the "Crab and Lobster"; not an inappropriate sign either; for "lobster pots" were in general use there, and supplied us with many an excellent supper. A "Chichester lobster" is proverbial as one of the four good things of Sussex, another being a "Selsea cockle." Pagham Harbour, lying as it were between Chichester and Selsea, could boast both of lobsters and cockles not inferior in flavour to those of greater celebrity for size.

At low water the fishermen might be seen walking across the soft mud of the harbour to look at their lobster pots, and carrying baskets for cockles, which they gathered as they went. I sometimes accompanied them on their way, and was always much struck at the skill with which they discovered and unearthed a cockle from below the surface

THE SLUICE.

of the sandy soil in which they lurked. To an unpractised eye it seemed nothing short of marvellous, when walking across a tract of ooze which looked "as bare as a billiard table," to see my companion suddenly stop, stoop down, plunge his forefinger into the sand, and scoop out a cockle, which till then had been to me invisible. His quick eye had detected the tiny worm-like hole which indicated the presence of the mollusk, and long practice enabled him to distinguish the contracted tunnel through which the cockle had passed from any other hole, or the boring of a Sandpiper.

But to return to the inn, with its lattice windows and sanded floors; the lodging was rough, but it was clean; and after a tramp of ten miles in the marshes after Snipe and Duck, or a hard day's work in the punt after Plover or Black Geese, it would be strange if a man could not sleep well, even though his room might lack a carpet.

Those who have read the works of the late Mr A. E. Knox—and who that is fond of sport and natural history has not?—will recollect the many passages in which allusion is made to Pagham Harbour, either as the scene of a good day's wildfowl shooting, or of some interesting ornithological observation. Residing, as he did, for some time in a cottage between Bognor and Pagham, this once famous harbour was his "happy hunting ground."

It was upon the long shingle beach that ran across the harbour's mouth that he used to lie and watch the wildfowl coming in from the sea to rest and feed after their long journeys from the north.

It was here that on a memorable occasion he turned to such good account the manœuvres of a punt gunner, whose sudden appearance in proximity to a large flock of wildfowl in the harbour at first filled him with consternation, but who eventually enabled him to make a most satisfactory right and left at a Brent Goose and a Wild Swan as they came flying

THE GREY PHALAROPE.

towards him after the discharge of the big punt gun had put them up (*Game Birds and Wildfowl*, pp. 61-71, and *Ornithological Rambles*, pp. 8, 9). It was on this part of the Sussex coast also that he made those interesting observations on the migratory habits of the Pied Wagtail (*Ornithological Rambles*, p. 81) and other small birds, which threw a new light on the subject of bird migration, and which have been since approvingly quoted in Yarrell's standard work

on British birds (4th ed. vol. i., pp. 544, 545). "The movements of the Pied Wagtail," says Professor Newton (*op. cit.*), "have been noticed by many writers, but by none more carefully than Mr Knox, who, having lived for some years on the coast of Sussex, was singularly well placed for the observation of migratory birds in general, and paid much attention to them. A great deal of what he has so happily recorded with respect to the Pied Wagtail applies equally to many others, so that his remarks deserve more than ordinary consideration, serving as they do to throw light on the whole of that mysterious subject, and being those of an unusually watchful and accurate ornithologist."

As might be expected from the nature of the place, the birds which resorted there were chiefly waders and wildfowl, and at all seasons some of the commoner species of Gulls. In spring and autumn the waders were decidedly in the majority, in winter the Ducks, Geese, and occasionally Swans were the most conspicuous objects upon this wild waste of mud and water. Forty years (*Eheu fugaces!*) have elapsed since the writer first visited Pagham Harbour, and discovered what an excellent spot it was for studying the habits, notes, flight, food, changes of plumage, and other peculiarities of the birds which resorted there; and between the years 1863 and 1887 there was no better "shore-shooting" to be had anywhere in the south of England than might there be enjoyed at the proper season. It was in 1862 that I made the acquaintance of the late Mr A. E. Knox, and listening to his animated

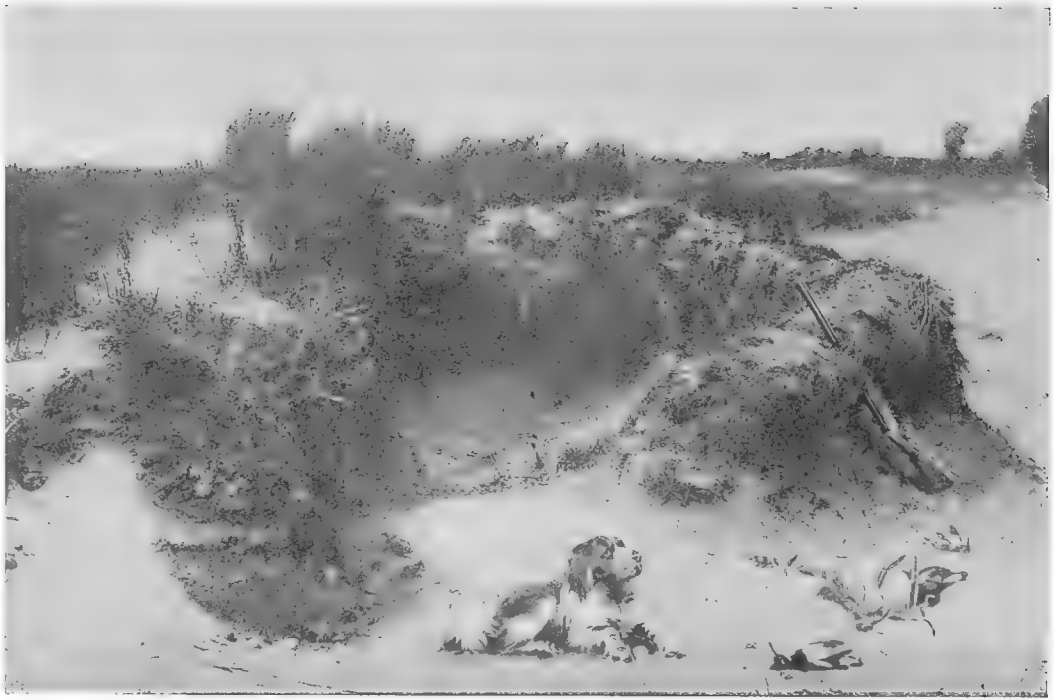
description of Pagham and its surroundings, became fired with his enthusiasm while profiting by his experience. Even at this distance of time I recall, as if it were only yesterday, the many enjoyable weeks spent at intervals in that lonely harbour, in the midst of the most varied bird life which could gladden the eyes of an ornithologist. Many a wily

THE WIGEON.

Curlew was then stalked and brought to bag; many a Plover and Redshank were decoyed within gunshot by an imitation of their notes; many a Duck and Snipe were flushed and killed out of the marsh drains. There seemed at that time no more enjoyable kind of shooting than that which was afforded by a tramp round the harbour, or a cruise just before high tide in a gunning punt.

To give an idea of the variety of birds that might be procured with an ordinary 12-bore shoulder gun, here is a list of birds killed one day at the end of August 1867 : 1 Sheldrake, 2 Teal, 2 Curlew, 1 Grey Plover, 21 Ringed Plover, 11 Knots, 4 Turnstones, 3 Greenshanks, 6 Redshanks, 1 Ruff, 2 Common Sandpipers, 2 Curlew Sandpipers, 24 Dunlins, 1 Little Stint, 1 Black Tern, 1 Black-headed Gull, 3 Herring Gulls, and 1 Lesser Black-backed Gull. On another day in September of the same year, the bag was : 6 Grey Plovers, 1 Curlew, 1 Whimbrel, 1 Bar-tailed Godwit, 4 Oystercatchers, 2 Redshanks, 3 Lapwings, 13 Knots, 10 Ringed Plovers, 1 Turnstone, 1 Common Sandpiper, 1 Curlew Sandpiper, 34 Dunlins, 4 Little Stints, 4 Grey Phalaropes, 1 Arctic Tern, 1 Black-headed Gull, and 1 Herring Gull. None of these birds were really wasted. Some of the best of each species were generally skinned and preserved, either for the shooter's own collection, or that of some friend ; a great many were eaten (and there are few better items in a sportsman's *menu* than a dish of roast Plovers or a properly made Knot pie). While such uneatable birds as Gulls, Terns, Scaup Ducks, Scoters, or what not, if not required for the collection, were given away to the fishermen, who either cut them up as bait for the lobster pots, or sold them to the nearest dealer in Chichester for what they would fetch.

Many a rare bird has made Pagham Harbour its temporary resting-place—sometimes to pass on unharmed, and possibly to return another season but oftener to fall a victim to some keen shooter



THE FOWLER'S SHELTER.

whose practised eye detects the presence of an unusual visitor amongst the flocks of common species which he is daily accustomed to see. Whether the rarities thus procured are always brought to the notice of naturalists is more than doubtful. Some of them occasionally get recorded by the shooters, or, coming to the hands of local collectors, eventually become immortalised in a county list. This was the case with the birds in Mr Knox's collection (now at Goodwood), many of which were procured at Pagham Harbour and in the neighbourhood, and may be found noticed in the "Systematic Catalogue of the Birds of Sussex," appended to that author's *Ornithological Rambles*.

Amongst the rarer birds of prey met with at Pagham Harbour, and occasionally shot there, may be mentioned the Osprey, Kite, and Montagu's Harrier. The last named (of which the writer has seen several) frequented the marshes on either side of the harbour, and were always observed in autumn, when the individuals met with were almost invariably birds of the year. Amongst the smaller passerine birds, the Waxwing and Red-winged Starling have been procured in this district; the Bearded Tit not far off, at Fishbourne, while the Rock Pipit was found breeding near Aldwick and Pagham, and the Cirl Bunting near Bognor. Amongst the uncommon birds which have been observed and procured at Pagham Harbour may be noticed the Dotterel (*Eudromias morinellus*), locally known as the "Land Dotterel" to distinguish

it from the "Ringed Dotterel," one of the commonest of shore birds. The former was very rarely met with, and then only in small "trips" in the marshes during the autumnal migration. The writer never fell in with it there but once. This was in the month of September, when five or six of them coming up unexpectedly from behind, dashed by so

THE BRENT GOOSE.

rapidly that a random shot only stopped a single bird, which proved on examination to be a bird of the year.

Amongst the rarer shore birds procured at different times in the harbour, or in the neighbouring marshes may be mentioned the Avocet, Black-winged Stilt, Kentish Plover, Dusky Redshank, Grey Phalarope, Spoonbill, and Crane.

Besides the ordinary wildfowl, such as Duck

and Mallard, Teal, Wigeon, Tufted Duck, and Goldeneye, there came to this favoured spot in winter Pintail, Scaup Duck, Smew, Merganser, and Goosander, regularly, immature Long-tailed Duck very rarely, and now and then a common Scoter strayed in from the sea. All the Grebes were represented at different times, though nearly always in winter plumage. Grey Geese were never at any time common in Pagham Harbour, even in very severe winters, the commonest Wild Goose there being undoubtedly the Brent. Mr Knox, however, once shot a couple of Grey-lag Geese in the harbour, and both the Bean Goose and the Bernicle have also been occasionally killed there. Brent Geese, on the other hand, were sometimes so numerous in the harbour at night, that fourteen were once killed at a double shot with a shoulder gun, by wading down a channel at low water and shooting into their dark, almost indistinguishable ranks as they paddled about in the dusk "in close order." In January and February the writer seldom had much difficulty in bagging a few of these birds, either by working a punt up to them, or, if they were wild, by lying concealed behind the sea-wall, and getting a fisherman to go round them in a punt and move them slowly towards the ambush. They never would come very near the shore, although by a little generalship they could sometimes be made to fly across a corner of the harbour within gun shot of the bank in their attempt to wheel before retreating to a safe distance in the middle of the harbour, on which

lucky occasions they usually left two of their number dead in their wake to be picked up by the man in the punt.

But these good old times are gone for ever. There is no shooting of any kind to be had there

THE FOWLER'S DOG.

now; for the harbour no longer exists, and the migrating flocks which wing their way in that direction now pass on to the westward in search of some other haven. A few years ago a company was formed for the purpose of draining and reclaiming this famous resort of wildfowl. After

many vain attempts to keep out the sea by working day and night, Sundays and weekdays, with relays of men, the mouth of the harbour was at length closed, and, the tide being forcibly kept out, the harbour, partly by pumping and draining, partly by evaporation, became gradually dry. A great portion of it is now under cultivation, and when the writer last visited this once "happy hunting ground," he found many acres of roots where he had often worked his punt, and put up a hare on the former feeding grounds of the Wigeon and Brent Goose.

For the purposes of sport, therefore—and it may be said for the purposes also of ornithological observation—this fine harbour is now utterly and irretrievably spoilt, affording another illustration of the way in which the fauna and flora of a district may, by man's interference and in the course of a lifetime become wholly changed in its character, and species become exterminated or driven away by altering the conditions of life under which alone their existence was possible.

DEER-LEAPS

In a few scattered parks in England may still be seen remains of what are termed "deer-leaps"—an ancient contrivance for taking deer, the origin of which dates back probably to the time of Canute the Dane, who, in the first year of his reign (A.D. 1018) did (as Manwood tells us in his *Treatise of Forest Laws*) "appoint such forests and chases as then were, their limits and bounds certain, and to the intent to have his own forests and other privileged places the better preserved from offenders in them." At a council held at Winchester in that year, he passed his now celebrated code of forest laws, which, afterwards confirmed by divers kings, regulated the ownership, preservation, and management of vert and venison throughout the land.[1] These laws were administered by a "swainmote," or court composed of officers called verderers, foresters, and agisters, who, amongst other business, adjudicated upon all cases in which deer were killed without warrant.

One of the articles of inquiry in the court of swainmote was: "Whether any man have any

[1] The authenticity of this Code has been much questioned, but the arguments *pro* and *con* are too lengthy to be here discussed.

great close within three miles of the forest that have any saltories [*saltatorium*], or great gaps, called *deer-lopes*, to receive deer into them when they be in chasing, and when they are in them they cannot get out again." This is, perhaps, the earliest explanation which can now be found of the meaning of the term "deer-leap," although, as will presently be shown, this definition admits of modification, for the contrivance in question was not, as here implied, a mere pitfall into which deer were driven, or might accidentally fall, and be confined until killed by the owner, who exercised the right of thus capturing them. Whether the Saxon "der-fald" (deerfold) may be regarded as synonymous with "deer-leap," is not certain. Prof. Earle, in his edition of the *Saxon Chronicles*, considers it identical with the *haia*. He says: "The hunt began by sending men round to brush and beat the wood, and drive the game with horns and dogs into the ambuscade. This pen is the *haia* so frequently occurring among the *silvæ* in Domesday. The '*der-fald*' of our text seems to be the same."[1]

It is remarkable that this very word "Deerfold," or, as it is pronounced, "Darfill," still survives as the name of a rough, hilly tract of country in the

[1] The meaning of the word *haia* (Fr. *haie*) is discussed and explained in my *Essays on Sport and Natural History*, pp. 41, 42. It occurs as the name of a town in Brecon, and also in the plural as the towns of Hayes in Middlesex and in Kent, and a piece of land in the parish of Shobdon, close to the site of a priory founded by Sir Oliver de Merlimond in the twelfth century.

parishes of Amestrey, Lingen, and Wigmore, in Herefordshire, which was common land until some time early in the last century.

Fosbroke in his "*Abstract of the MS. Lives of the Barons of Berkeley*, by John Smith, Esq., M.P. for Midhurst," *temp.* Jac. I. (p. 77), explains "deer-leaps" to be "private parks adjoining forests, allowed by royal license to have places where the deer might enter by leaping and be retained."

More accurately speaking, of course it was not the park "allowed to have such a place," but the place itself, which in its formation varied in different localities according to the nature of the ground and the general surroundings. Sometimes it was merely a low place in the park paling over which the deer could easily jump, but having on the park side a ditch with a long slope towards the park, rendering return difficult. The "deer-leap" at Wolseley Park, bordering on Cannock Chase in Staffordshire, is of this description. An engraving of it is given in Shirley's *English Deer Parks*, 1867 (p. 191).

In other cases where no paling existed a deep fosse was dug along the boundary line, and a perpendicular wall (some seven or eight feet perhaps in height) was built from the bottom of the fosse to the level of the ground on the forest side; while on the park side the ground was gradually sloped away from the bottom of the wall towards the park, the result being that a deer could leap down from the forest into the park, but could not so easily get back again. Of this description was the "deer-

leap" at Hursley Park, Hampshire, which is also figured by Mr Evelyn Shirley in the work last quoted (p. 85), and I have seen the remains of a similar one at Exton Park, Rutlandshire, the seat of the Earl of Gainsborough.[1]

The privilege, which was sparingly accorded, of making and maintaining a "deer-leap" on the borders of a forest or royal chase was always specially granted by deed or charter, and could not otherwise be claimed as of right by the owner of the park, who had license to inclose it.

The records of special grants of this nature are not very numerous, and a few may here be cited as curiosities.

In the county of Somerset, Robert de Were, a son of Robert Fitzharding (*temp.* Hen. II.), had "deer-leaps" on his manors of Barrow and Englishcombe.

A patent roll of the eighth year of King John (A.D.

[1] The position of this "deer-leap" is somewhat singular, inasmuch as it is not situated, as usual, on the present boundary of the park, but directly across a broad ride in Tunnelly Wood. An old keeper (Robert Williams, aged seventy-four), with whom I had some conversation on the subject, told me that he remembered the old people in his youth talking about this "deer-leap," and that there was a tradition to the effect that it was used for shooting deer; that the shooter crouched in the fosse under the stone wall, and that the deer were driven by beaters directly up the ride, and so forced to take the leap. I cannot help thinking that this was altogether a misapprehension of its object; and judging from the growth of the timber, I should suppose that there has been an alteration of boundary, in consequence of the wood on this side now projecting further into the park than was formerly the case. I remarked also that the slope of the fosse from the base of the stone wall is towards the park, and not towards the forest.

1206), grants a license to John Comyn, Archbishop of Dublin, to have a park at Kilcopsantan, and a "deer-leap" therein. In 1247 an agreement made between Robert de Quincy, Earl of Winchester,

A TYPICAL FALLOW BUCK.

and Roger de Somery, Baron Dudley, defined their respective rights of hunting in Charnwood Forest, and the adjoining park of Bradgate, in Leicestershire. It is cited by Blount in his *Ancient Tenures*, and is regarded as one of the earliest and most

curious instances which can be adduced of a hunting agreement. I need only quote so much of the translation as relates to the "deer-leaps" between the forest and the park :—

"This is the agreement made at Leicester on the day of St Vincent the Martyr (January 22), in the thirty-first year of the reign of King Henry III., son of King John (Anno 1246), before Sir Roger de Thirkilby [and others], justices in eyre there, between Roger de Quincy Earl of Winchester, and Roger de Somery. To wit: That the aforesaid Roger de Somery hath granted for him and his heirs that the aforesaid earl and his heirs may have and hold his Park of Bradgate so enclosed as it was on the octave of St Hilary (January 20) in the thirty-first year of the aforesaid King Henry with the 'deer-leaps' then made therein (*cum saltatoriis tunc in eo factis*). And for this agreement and grant, the same earl hath granted for him and his heirs that the same Roger de Somery and his heirs may enter at any hour on the forest of him the said earl to hunt in it with nine bows and six hounds, according to the form of an Indenture before made between the aforesaid Roger Earl of Winton and Hugh d'Albany Earl of Arundel in the King's court at Leicester. And if any wild beast wounded by any of the aforesaid bows shall enter the said park *by any 'deer-leap'* or elsewhere, it shall be lawful for the aforesaid Roger de Somery and his heirs to send one or two of his men who may follow the aforesaid beast with the dogs pursuing it within the aforesaid park, without bows or arrows, and may

take it on the day whereon it was wounded, without injury to any other beasts in the said park: provided that if they be footmen they shall enter by some 'deer-leap' or 'haie'; and if they be horsemen they shall enter by the gate if it be open; or otherwise shall not enter before they wind their horn for the keeper if he will come."

The park of Harringworth, Northamptonshire, within the forest of Rockingham, the principal seat of the Zouches, is recognised in the third year of Edward III. (1329), when a license was granted to William La Zouche to make a "deer-leap" within the manor.

Lastly may be mentioned Wolseley Park, Staffordshire, adjoining Cannock Chase, which was originally inclosed about 1470 by license granted to Ralph Wolseley, a Baron of the Exchequer in Edward IV.'s reign. Mr Evelyn Shirley, who in his *English Deer Parks* has given an engraving of the "deer leap" at Wolseley, as above-mentioned, refers to it as an existing park, with the right of deer-leap from the Chase, and regards it as a unique case of a chartered "deer-leap" still exercising its privileges.

Chafin, in his *Anecdotes of Cranbourn Chase* (p. 16), quotes an instance of a man forfeiting an estate adjoining the Chase through his making and using an unauthorised "deer-leap." He is stated to have converted some of the pales on the Chase side into a sort of pitfall, so that the deer could easily leap in, but could not get back again; and to induce them to be thus entrapped they were

enticed by apple pomace, of which the deer are particularly fond, and which they can scent from a long distance. The keepers of the Chase having reported this to the lord of the manor, litigation ensued, when an investigation of title-deeds showed that the owner of the illegal "deer-leap" was wrongly seised of the estate he held, his predecessor having had only a grant for life—a discovery which probably would never have been made had it not been for his assuming the right to make a "deer-leap."

As the narrator of this incident in 1818 was acquainted with the parties, and cognisant of all the proceedings, we may regard it as one of the latest instances on record of the actual use of a "deer-leap." Mr Evelyn Shirley, writing in 1867, refers to the "deer-leap" at Wolseley as "still exercising its privileges," from which we are to infer that at that date deer (presumably fallow deer) came in at least occasionably from Cannock Chase. I have been unable, however, to find any confirmatory evidence of the existence of deer in that Chase at so recent a date. In Garner's *Natural History of the County of Stafford*, published in 1844, no mention is made of their existence there, although the author of that work speaks of the former existence of the red deer "together with thousands of fallow deer," in the same county, in the forest of Needwood, until its enclosure at the commencement of the last century. As Wolseley Park was separated from Needwood on the north side by the Trent, there can be little

doubt that any deer entering by the "deer-leap" came in from Cannock Chase, lying to the south of it.

The red deer, we may presume, have long been extinct there, or they would have been noticed by Garner; but it would be interesting to know whether any wild fallow deer still roam the Chase as they do in Epping Forest.

Thus far, it will be seen, I have adverted to the use of the term "deer-leap" only in what I conceive to be its original sense. In some parts of the country it has a different signification, and is employed to denote a certain space on the boundary of an ancient forest, intervening between the forest and the land adjoining. The exact width of this strip, or leap, is variously estimated in different parts of the country. In a communication, signed "Eboracum," in *The Field* of December 8, 1883, the writer says: "It bears different names in different localities, as 'bow rake' and 'pale dyke,' and is supposed to be nine yards, or as far as a deer can leap or an arrow be shot—hence 'bow rake.'" There must be some mistake however in this interpretation of the term "bow rake," for to shoot an arrow only nine yards would be mere child's play. It is more probable that "bow rake" is equivalent to a bow's length. The forester of old, habitually carrying his bow, would always have a convenient measure at hand, and, instead of stepping out yards as we do now, he would lay down his bow, scratching or "raking" the soil (A.S. *racian*) with the horn tip of the bow at the end of

each measured length. His measure then would be so many "bow rakes."

But to return to our "deer-leap." A contributor to *Notes and Queries* (2nd ser. iii., p. 137), writing in 1857, says :—

"Some few years ago I attended the perambulation of a manor in Devonshire. In the course of our proceedings we came to one side of the manor, the boundary of which from time immemorial was a 'deer's leap' from the visible and actual boundary (a bank and wall) which separated the manor we were perambulating from another, *i.e.*, the rights of the adjoining manor extended a 'deer's leap' into the one we were perambulating.

"There were many conflicting opinions as to the distance of a 'deer's leap,' but it was eventually decided to dig a spit of turf, as is the usual custom on such occasions, 24 feet from the bank and wall."

He adds: "I have it from a friend well versed in business of this nature that the distance of a deer's leap is in some districts 24 feet, in others 12 feet."

Another writer in the same volume of that useful periodical (iii., p. 195), says :—

"The term 'deer-leap' or 'buck-leap' was generally applied to a narrow strip of land adjoining to and running round the outside of the paling or fence of an ancient park. The breadth of this strip was the distance which it was supposed a deer could leap at one bound; hence its name."

He adds: "The remains of what was said to be part of the 'buck-leap' at Shirley Park, Derbyshire,

existed within my memory along the side of one field."

A description then follows, which shows it to have resembled the "deer-leap" at Hursley Park, Hants, already noticed.

There is yet another sense in which the term "deer-leap" has been used, namely, to designate the spot where, on some particular occasion, an extraordinary leap was made by a deer. In this sense the word is used by Gilpin in his *Forest Scenery*, who, at p. 223 of his second volume (Lauder's edition), tells us:—

"In our way to Hound's Down, we rode past a celebrated spot called the 'Deer-leap.' Here a stag was once shot, which, in the agony of death, collecting his force, gave a bound which astonished those who saw it. It was immediately commemorated by two posts, which were fixed at the two extremities of the leap, where they still remain. The space between them is somewhat more than eighteen yards!"

But here surely there must be either a *lapsus calami* or a *lapsus memoriæ*.

ANTLERS

So much attention is nowadays paid to the study of natural history, that there must be few people who do not know, even if they do not quite understand the process, that deer annually shed their horns, and in this respect differ remarkably from antelopes and other hollow-corned ruminants, whose horns are persistent. A general statement to this effect may be found in most books dealing with the natural history of the mammalia; but few authors afford much information on the subject, or describe with much clearness what takes place. Even in so authoritative a work as Bell's *British Quadrupeds*, some curious mistakes on this point are made. It is stated, for instance, under the head of "Red Deer" (p. 349), that "the annual shedding takes place shortly after the pairing season"; and, on the next page, that "about February the old stags drop their antlers." But this is not quite correct. The rutting season is in September and October; the antlers are not shed, as a rule, until April or even May, the oldest stags being the first to lose them. The exact time, in fact, depends upon the age of the stag and the temperature of the winter and early spring. Should the winter be cold and spring protracted,

the stags shed their horns as late as May; the old ones at the beginning, the young ones at the end of that month. It is very rarely, however, that

AN EXMOOR STAG.

an old stag will carry his old antlers after the beginning of May; but a two-year-old deer will do so for a month or two later. Both horns are not always shed at the same time; one of them, perhaps, will be retained for a day or two after the other.

In a few days after the old horns have dropped, the new growth shows itself, and gradually the new antlers are developed. They are then covered with a thick "velvet," which preserves the point, as yet soft and tender, from injury. While in this soft condition they are very sensitive, and, to avoid injury by striking them against trees, the deer leads a life of retirement. In about twelve weeks they are full-grown, and, as they gradually harden, the animal rubs them against a tree to get rid of the "velvet." This can only be done gradually, and a stag may often be seen at that time of year with the "velvet" hanging in strips, being only partially detached from the horns. The weight of the antlers in a full-grown stag varies, according to their size and massiveness, from ten or twelve to fifteen pounds.

In the *Zoologischer Garten* for February 1866 will be found an interesting article by Dr Soemmering on the growth of deer horns, a translation of which, together with an illustration, appeared in *The Field* of July 21, 1886. It contains a careful description of the progressive growth of the new horn, with figures showing the altered appearance presented at intervals of a few days between the middle of March and the end of May.

Antlers differ but little in their composition from true bone, and chiefly in the proportion of their constituents. Ordinary bone consists of about one-third part of animal matter or gelatine, and two-thirds of earthy matter, about six-sevenths of which is phosphate of lime

and one-seventh carbonate of lime with an appreciable trace of magnesia. The animal matter gives the bone elasticity and tenacity, the earthy matter hardness and rigidity.

A "ROYAL" FROM INVERNESS-SHIRE.

Deer horn consists of about thirty-nine parts of animal matter and sixty-one parts of earthy matter of the same kind and proportions as is found in ordinary bone. This is the mean of many results of analysis of antlers of different species of deer by different processes, amongst which are very slight

differences in results. This excess of animal matter seems necessary to give the antlers elasticity and strength, and adapt them to the purpose for which they are designed.

What becomes of the old horns is a question which is often asked, the inquirers usually averring, and with some truth, that they are seldom or never to be seen lying about. The explanation of this is really not far to seek. In the first place, it must often happen that the horns are dropped in out-of-the-way places, amongst underwood, or in heather, where they are lost to sight, and seldom discovered unless by a systematic search for them, or by accident. In the next place, park-keepers and foresters keep a pretty sharp look-out for them in the course of their daily rounds, knowing well their value to the cutlers for knife handles, and to the saddlers for whip handles. And in the third place, the deer themselves help to get rid of them by eating them. The question is asked from time to time whether this can be true, and whether it is possible that deer can gnaw at all in the proper sense of the word, having no incisor teeth in the upper jaw, but only a hard callous pad, against which the lower incisors can only cut off grass and leaves in the same way that cows do with similar dentition. But they have powerful molars, or grinding teeth, quite strong enough to bite and break off boughs with, and to gnaw or crunch up bones; and there can be no doubt that they use them for that purpose.

Scrope, in his *Days of Deer-stalking*, states

that hinds have been seen to eat the shed horns. One, he says, will consume a part, and when she drops it, it will be taken up and gnawed by the others. He adds that "the late Duke of Athol once found a dead hind which had been choked by a part of the horn that remained sticking in her throat." The author of that entertaining and now scarce book, *The Chase of the Wild Red Deer*, the late Mr C. P. Collyns, was assured by keepers and hillmen of great experience and undoubted veracity in Scotland, that it is a common occurrence for hinds to eat the cast horns, though he was never able to confirm it from his own experience in Devonshire and Somersetshire. In *The Field* of January 23, 1858, "A Highlander" wrote, saying: "As to what becomes of the horns annually shed by deer, I can answer, from actual observation, that very many of them are eaten, or at least munched up by other deer. A deer, either stag or hind, I have seldom seen passing a fallen horn without gnawing it; and very rarely indeed have I seen a shed horn that was not partially gnawed. It is said that the stags conceal their horns, when shed in soft places. I have never seen them do so; but the finest specimens of shed horns I have ever found were during the summer's drought, where the waters of some bog had nearly disappeared. I never found an entire horn except in water or moss." Lord Lovat, who has referred to the subject in his chapter on "Deer-stalking" contributed to the volume on *Moor and Marsh Shooting* in the "Badminton Library," says:

"Unless picked up very soon, these shed horns are rarely found whole. Both hinds and stags are very fond of eating them, as they are of any bones they may find."

At a meeting of the Zoological Society in December 1883, Sir Joseph Fayrer exhibited some deer horns which he had picked up at Dunrobin, and which had in great part been eaten away, as he thought probable, by deer,[1] although (as he remarked) "it was difficult to conceive how a deer, with its toothless upper jaw" (he meant *in front* only) "could eat a hard bone; for such is a shed horn." His surmises, however, were doubtless correct, and were confirmed by the subsequent receipt of several more horns that had been partially gnawed by deer in the same forest, and were sent up by Mr James Inglis, the head keeper at Dunrobin. In a letter which accompanied these specimens, Mr Inglis wrote:—

"I asked the stalkers to keep a look-out, and see if they could find any deer eating horns, and am glad to say that they have been able to put the matter beyond all doubt. Donald M'Rae saw with his glass a stag in Dunrobin Glen eating a horn. He went to the place where he saw him eating it, and found it partially eaten. I send it with the others. You will find a ticket on it to distinguish it from the rest. Duncan M'Pherson saw with his glass a hind last week (December 1883) eating a horn also; he did not find the horn, but he saw the

[1] One of these horns was subsequently figured in *Nature*, December 20, 1883.

hind quite plainly with it in her mouth, gnawing away at it near the point. He added that a shepherd, in the parish of Lairg, had a cow that ate all the bones she could find, going miles for them, and eating up shank bones and all; the ribs being eaten easily, and seeming to give no trouble whatever."

Not only is it a fact, then, that deer eat the old horns that are shed every year, but they will also gnaw at them when they have a chance *before* they are shed. The late Sir Thomas Moncrieffe informed Dr Buchanan White, of Perth, that he once watched a hind gnawing the tines of the horns on a stag that was lying beside her, and which he afterwards shot.

Mr Overton, the head keeper at Bradgate Park, near Leicester, where both red and fallow deer are kept, states that he has not the least doubt of their eating each other's horns. He has himself noticed several cases in which both the broad antlers and top points had been gnawed off, and had also seen Scotch heads that had been quite spoiled by the tines having been gnawed, which he thought must have been done after the horn had become hard and whilst the owner of it was still living.

Fallow deer, as well as red deer, have the same propensity and liking apparently for the saline flavour of the cast horn. I have several times picked up fragments of antlers thus gnawed in parks where only fallow deer are kept. Doubtless the habit is common to all deer.

The character of heads, as every deer-stalker

knows, varies in different forests; there are usually most points where there is most wood, or good winter feeding and shelter. It is the opinion of Lord Lovat, as stated in the volume above referred to, that in hill deer heads go on improving up to the age of twelve or fifteen years; on low ground, with more forcing food, they come to maturity sooner. The heads then remain about the same for some years, after which they gradually lose beam, get smoother from the blood vessels being no longer so vigorous, the points taper more, and are shorter, till finally the head dwindles to half its former size.

The late Duke of Athole collected and preserved the shed horns of certain park stags that were known, and whose horns could be found and identified as soon as dropped, and he noticed that at the age of twelve or thirteen they began to deteriorate.

Some years ago Mr J. Clarke, of Lynton, being anxious to settle certain points in connection with the growth of deer horns, upon which a difference of opinion prevailed, conceived the idea of keeping a red stag in a paddock under his own immediate supervision, and making regular observations upon it, till it reached the condition of a fully-grown adult animal. This he carried out, published the result of his observations in *The Field* of November 11, 1865, and subsequently in a small pamphlet printed at Barnstaple in 1866, but which has long been out of print and unprocurable. It has been reprinted, however, in *The Zoologist* for September 1884, and

is well worth reading by those who are interested in the matter, as are also the criticisms thereon (printed in the succeeding number for October) by Lord Ebrington, whose experience as master of the Devon and Somerset Staghounds enabled him to write authoritatively on the subject.

The question is sometimes asked whether it is possible to tell the age of a stag by his horns. The late Rev. J. Boyce, one of the oldest stag-hunters in the county of Devon, on being asked this question, replied, "No," and that the only way in which the different ages could be possibly ascertained was to keep observation on one and the same animal for several years in confinement, as in the experiment made by Mr Clarke, of Lynton. Since then the subject has been more fully investigated and elucidated, and in the Natural History Museum may now be seen a series of cast horns *from the same animal*, showing the appearance they present at different ages.

A WET DAY ON THE HILL

MUCH of the enjoyment to be derived from deer-stalking in Scotland is, no doubt, due to the beautiful wild scenery amongst which the sport is pursued. The heather-clad hills, the steep corries, the great grey boulders relieved here and there with patches of bracken, the peaty burn meandering down the hillside amidst stones and slabs, and mosses of lovely texture and varied hues, all combine to form a landscape *sui generis*, such as can be found nowhere but in bonnie Scotland. If to these surroundings we add the placid surface of a loch lying far below us as we look down from a heathery knoll, or a broad blue arm of the sea running in between rocky islets round which the wings of seafowl gleam white in the distance, we complete a picture of which the eye can never weary, and which inspires a feeling of restful enjoyment as delightful to experience as it is difficult to describe. But much will naturally depend on the weather. Given a clear day, with not too strong a light, and a moderate wind, all may go well; but should a mist descend from the hill, or a light drizzling rain continue to fall steadily, not only will the chances of sport be considerably reduced, but the enjoyment of the day may be

entirely spoilt. Amidst such wild surroundings, however, it need not be supposed that enjoyment arises solely from success in compassing the death of a deer. There is a pleasure in contemplating, even at a respectful distance, the free, unfettered movements of a wild stag, or the picturesque attitudes of a lot of hinds while still unsuspicious of danger. If as you approach them a solitary Blackcock springs from some bracken by the burn-side, or a pack of Grouse go streaming away to give alarm to the deer, you see in the appearance of the startled herd another charming picture of wild life in the Highlands. Whether you get a shot or no, seems scarcely to matter. You have seen what you came out to see—a wild red deer. You have watched him while still unconscious of your presence, you have noticed his demeanour when first he took your wind, you have marvelled at his keen sight, his wonderful sense of smell, and, as soon as he moves, his extraordinary pace over rough ground, where at every step he seems to risk a broken limb, until at length he has disappeared from view, and the corrie holds only the Grouse which have given him timely notice to quit.

Many a time and oft while tramping over the hill with the rifle still in its cover, and the drizzling rain descending gently but coldly, even in September, have I stood still and felt a greater pleasure in contemplating the changing moods of Nature than in looking for the chance of a shot. Sometimes, indeed, through sheer carelessness and

neglect of the proper use of the spy-glass, have I let a good stag go away unharmed, and solaced myself with a loving stare at an Eagle perched on a crag above me, or a pair of soaring Buzzards higher still.

As an example of a day's enjoyment without sport while in the midst of opportunities for it, a day in September comes vividly to mind. Even the date is accurately remembered—the 26th—as marking the first fall of snow that year, and the extraordinary change of temperature which accompanied the pursuit of Grouse and Ptarmigan within a fortnight of shooting Partridges under a burning sun in a southern county.

The first look out from the window on awakening was not reassuring. A light rain and leaden grey clouds betokened a repetition of the weather of the day before. It might or might not improve as the day wore on—there was no saying; and one had to decide whether to shoot or stalk, or stay at home and try to sketch the loch from the windows of the lodge. Exercise of some sort was decided upon. Whether one got wet through or no, seemed of little consequence. We were getting used to it after a week's training, and to come in at dusk well soaked, to enjoy a warm bath and a change, seemed only part and parcel of the daily routine, no matter what was the sport in view.

Stalking, then, being the order of the day, and breakfast over, we fling on our shooting capes, pull our caps over our eyes, and start for the hill.

A tramp of two miles puts us in good marching order before reaching the ground we have in view as the scene of the day's operations. As we sit down to spy the face of the opposite hill, one by one we pick up the ruddy coats of recumbent deer, at times almost invisible until lit up by a gleam of sunshine on the passing of a cloud. Then they seem to stand out sharp and clear, and their coats shine bright by comparison with the brown heath amongst which they are lying. We can count them easily, but they are all hinds and small stags, not worth a stalker's attention.

As we continue our ascent, the rain gets colder, turns to sleet, and finally to snow, until by the time we have reached the summit, nearly 3000 feet above sea level, our jackets and caps are as white as the surrounding rocks. One can scarcely believe it is the middle of September. So stealthy and unobtrusive are our movements that the Grouse hardly perceive us, or, if they do, are unwilling to take wing. A bonnie brood unexpectedly and closely approached, whirr round the shoulder of the hill and disappear in the blinding snow. On the way up we are reminded of the loneliness of the place by the occasional hoarse croak of a Raven, a pair of which share the solitude of the crags with more than one pair of Buzzards. Before the snow fell, and while yet a fitful gleam of sunshine illumined the rocks, three of the latter birds came into view, soaring in circles, and almost deluding us into the belief that they were Eagles, so large did they appear on outspread wings when seen at

no great distance. But the Eagle was there, too. High above all, and perched upon a lofty crag, he sat so still that he would have escaped notice altogether had he not given a vigorous shake of his wings to get rid of the falling snow just as our spy-glass was slowly sweeping the skyline. We sat down to have a longer look at him, and all we wished for was a better light. He was within range of a rifle, and for a moment we calculated the distance and speculated on the result of a shot. But the idea was at once dismissed as base. Eagles were too seldom seen to be treated in that fashion, and the pleasure of seeing one alive amid such wild surroundings far outweighed any satisfaction that could arise from contemplating his lifeless form. All that we thought of doing was to get as near as possible to him before he took wing. Nearer and nearer we approached, until at length the huge pinions were unfolded and with two mighty flaps the great bird launched itself in the air and flew heavily out of sight.

Hardly had the Eagle disappeared from view when we found ourselves sooner than we expected in the haunts of Ptarmigan. A brood rose within twenty yards of us, and, flying a short distance, pitched again in a spot which we could easily reach. So tame did we find them that we were able to sit down within shot of them and have a good look at them through our glasses. It was a great treat to observe at such close quarters these most inaccessible of all British birds. Inaccessible, that is, as regards their lofty haunts, but tame enough when

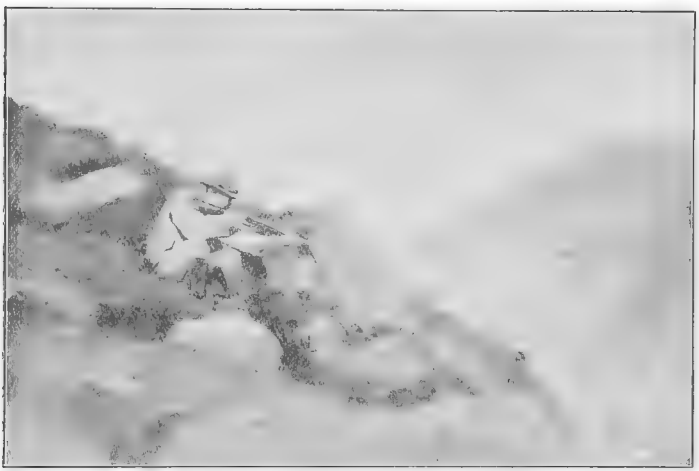
found, because seldom visited or disturbed. A second brood later on afforded a similar chance

A ROYAL.
(From an Original Sketch by Captain H. Hart Davis.)

for observation, and had we been armed with a gun instead of a rifle in its cover, it would have been easy to have secured two brace.

Our thoughts on leaving home were of deer, but as yet no chance had offered for a stalk. We had seen a few hinds and small stags, but none worth attention, and it looked as if the rifle was to be carried home without a shot being fired. We had decided to go right over the hill and return home by another route, and cautiously commenced the descent. This was necessary for two reasons. First, in order not to disturb any deer that might be lying below us, and, secondly, because the great round boulders over which we had to pass were extremely slippery with their caps of snow. It was well we paused to reconnoitre, for about a hundred yards below us on the far side of a huge boulder lay a stag. Only the tops of his antlers were visible from our position, and we judged him to be a stag of ten. He could not see us from where he lay, and the wind was right. Here, then, late in the afternoon, was the chance for which we had been looking all day. Cautiously the downhill stalk was commenced, and for a short distance all went well. Suddenly, to our dismay, we found ourselves in a *cul-de-sac*. Huge boulders rose in front and on both sides of us. It was impossible to advance another yard, and there was nothing for it but to retrace our steps, make a slight *détour* to the left, and again advance. The danger was that this *détour* might just clear the rock behind which the stag was lying, and that he would then see us. Whether this is what happened, whether he winded us, or heard the occasional clatter of the big loose stones over which we had to crawl cannot

now be explained. Suffice it to say, that on looking in the direction of his particular rock, we saw, to our chagrin, that the antlers had disappeared. We had hardly realised the fact that he was gone before we viewed him striding down hill to the left, and at a good pace considering the badness of the ground. It was not an easy shot



A DOWNHILL SHOT.
(*From an Original Sketch by Captain H. Hart Davis.*)

and—it was missed. Sufficient allowance had not been made for the animal's continuous descent, and the bullet had sped over him. It was mortifying enough at the time, but proved a wholesome lesson. The rifle was returned to its cover, and as we tramped homeward in the dusk we found consolation in the fact that, if we had not killed a deer, we had seen much to compensate us for the disappointment.

THE WAYS OF GROUSE

MANY an enthusiastic Grouse shooter has been heard to express regret that he knows so little of the bird which provides him in August with such excellent sport. He has not time, he says, to learn much about its mode of life. He sees it only for six weeks or a couple of months in the year, and at a season when, intent on killing it, observation of its habits is rendered difficult by reason of its wildness. By every means in his power he renders it so unapproachable that, in order to see it at all, he has to employ a long line of "drivers" to send it flying over his head; and in lieu of watching at close quarters one of the handsomest birds in the British game list, he can only contemplate its dead body when it has fallen to his unerring aim. A dead Grouse lying in a patch of purple heather is truly a thing of beauty, and cannot but evoke the greatest admiration; yet, if the sportsman be also a naturalist, he will hardly repress a feeling of regret at having killed a creature so surpassingly beautiful. The first thing probably that will strike him is the harmonious colouring of the bird's plumage; harmonious, that is, with the natural surroundings of the moor on which it lives. A delicate blending of the brown and yellow tints of autumn, relieved here and there with a fleck of white, and a sombre patch of black upon the breast

that simulates the shadows which lie beneath the brown heather stalks. Crowning the short mottled feathers of the head is the little scarlet comb which might easily be mistaken, while the bird is at rest, for a brilliant flower of the heath amidst which it

A DEAD GROUSE.
(From an Original Sketch by G. E. Lodge.)

reposes. It is impossible to conceive a more beautiful combination of colours, or one more admirably adapted to favour the bird's concealment from its enemies, especially from the soaring Falcon, at whose approach the Grouse crouch low, and remain motionless so long as it remains in sight.

To see Grouse at their best the observer should visit the moors in spring, when Nature is awakening from the long sleep of winter, when the heather is sprouting, and the packs are breaking up in preparation for the nesting season. Freedom from molestation for a few months has restored confidence in the scared birds. No longer driven hither and thither over hill and dale, they are settling down quietly, and once more will suffer a near approach without alarm; for on warm days in spring, just before they begin to nest, Grouse will sit closer than at any other time of year. When pairing commences they become restless, the cocks chasing the hens on the wing with a sharp zig-zag flight like a Snipe.

Grouse are most plentiful in the zone between 1000 feet and 1500 feet, and do not go much above 1700 feet. Spots where bilberries ripen, kept moist by springs, and with a southerly exposure, attract them in autumn, though they may be under a northern ledge in spring. For their nests they like broad shallow hollows with springs at the edges, and a flat ridge at least on one side on which to crow and sun themselves. They build also in the peat, in deep stream courses. The nest, seven or eight inches. across, is made of rushes or grass, with a few feathers. The eggs, usually from seven to ten in number, are handsomely mottled like the birds' own feathers with reddish-brown and buff, a style of colouration which favours their concealment from most prying eyes, save those of the Hoodie Crow and the Rook, which persistently hunt for them.

The greatest number of eggs are laid during the first fortnight in May, though a good many may be laid in April if the weather is favourable. Incubation lasts twenty-four days, and the critical time for the young birds is during the first fortnight of their existence. If during the month of June the weather happens to be cold and wet, numbers of chicks perish, and unless second broods are reared, a marked deficit will be observed in the supply of Grouse when the shooting season comes round. Even the old birds are affected by the state of the weather at nesting time, for on this depends the condition of the heather tops on which they chiefly subsist. The quantity consumed by each bird daily is surprising. The writer once took from the crop of a hen Grouse a mass of fresh heath tops weighing $2\frac{1}{2}$ oz. At this rate, to support 1000 brace of Grouse a moor would have to yield nearly a ton of heather tops per week. What a demand must be made on Dame Nature to keep up this supply, and how important that the weather should conduce to a healthy and continuous crop! No wonder that the Grouse should suffer when the heather is blighted by late frosts!

Fortunately, they do not depend entirely upon this kind of food, for, although they feed largely upon the fresh tops of the common ling (*Calluna vulgaris*) and the fine-leaved heath (*Erica cinerea*), which are reduced to pulp by the action of the gizzard, they get plenty of insect food in summer, especially caterpillars, and subsist largely on the fruit of the bilberry, cranberry, and crowberry (*Empetrum*

nigrum), of which they are particularly fond. In the autumn they visit the oatfields, and in winter, when driven off the moors by heavy snowstorms, they have been found feeding on the farmsteads on hips and haws. In January 1886, on some of the Yorkshire moors, the snow was more than a foot in depth above the heather, and large drifts formed on a very extensive scale. The Grouse suffered severely, being quite unable to penetrate the frozen mass for food, and in consequence they left the moors for the lower cultivated ground to an extent never previously observed. A field of turnips was swarming with the starving birds which vainly attempted with numerous Partridges to scratch down for food. The Grouse were perched on the fences, feeding on the berries like so many Fieldfares, and on several occasions they alighted on the branches of trees. As far as one could see, they had abandoned the moors, and were feeding miles away in the cultivated districts on anything they could get in the way of food.

The flying powers of Grouse, although at times extremely rapid, are, according to Mr Millais, far inferior in point of endurance to either Blackgame or Capercaillie. They seldom cover distances exceeding two miles at one stretch unless unusually harassed in stormy weather, or scared from their ground by hawks or the artificial kite. The usual length of a Grouse's flight ranges from a quarter to three-quarters of a mile, depending on the nature of the ground over which they are passing, being, as a rule, much shorter on heather flats, where they have

numerous and agreeable resting-places, than on broken ground and rocky hill faces.

As to the rate of speed at which a Grouse travels when going at his best pace various estimates have been given, but in most cases they have been mere guesses. Perhaps the nearest approach to truth was achieved by the late Major Fisher, who, in the writer's presence, once flew a trained Falcon at a Grouse which saved itself by dashing into a plantation exactly a mile from the place where the bird rose. The flight was timed with a stop watch, and the distance was covered in fifty-eight seconds. Being in front of a pursuing Falcon, it may be assumed that the Grouse in its efforts to escape was flying at its highest rate of speed.

The average weight of an old Grouse is from 20 oz. to 24 oz. The heaviest Scotch birds have been found to weigh 28 oz., and some have been killed in Orkney weighing as much as 30 oz. As a rule, cock birds weigh about 3 oz. more than hens, the weight depending upon the abundance of good food that the birds are able to obtain, as well as upon freedom from disease.

The subject of Grouse disease is one that cannot be discussed in a few lines. It has claimed the attention of so many observers, and evoked so many different opinions, that it would be impossible in the space here available to deal with the various views which have been expressed. It must suffice to state a few facts as briefly as possible. The late Dr Cobbold, a high authority on the nature and development of parasites, considered that the disease was due to

infestation of the birds by a thread worm (or nematoid) *Strongylus pergracilis*—while tape-worms were also credited with helping a fatal result. But the parasitic theory is disposed of on the simple ground that hardly a Grouse is found to be free from worms in its digestive system, and healthy birds are found to possess both forms of worms independently of any symptoms of Grouse disease. The late Mr John Colquhoun, author of *The Moor and the Loch*, as well as Dr D. G. Macdonald, who has written a volume on the subject, regarded the weakening of the bird's constitution by such causes as bad seasons, insufficient food, and overstocking as the prime factors in inducing the ailment, but such opinions, while deserving of consideration, leave the idea of a specific cause undiscussed. Both Dr Farquharson and Dr Andrew Wilson have expressed their belief that Grouse disease is an epidemic and infectious fever, characterised by inflammatory symptoms of the respiratory and digestive organs. Dr Klein, recognising its infectious nature, is convinced that it is due to the multiplication in the body of the bird of a specific germ, whose conveyance from the sick to the healthy Grouse accounts for the spread of the disease. The chief changes he finds in the lungs, while congestion of the liver is also a conspicuous sign. In 1887 he went to Scotland at the request of the Editor of *The Field*, for the express purpose of investigating the cause of Grouse disease. By making cultures from the blood of Grouse which had succumbed to the disease, he

succeeded in communicating what he regarded as the disease to other creatures, but not to healthy Grouse. By this omission he failed to prove that he had really discovered the bacteria of Grouse disease and (as pointed out in *The Times* of 13th August 1904) this was the weak point in his argument. But if he was not successful in finding the specific microbe of the disease, it is nevertheless probable that bacteria of some kind are the primary cause of it. The inquiry for a remedy is not easily answered. The only measures likely to be available in checking the disease are not so easy of application. It is all very well to advise that a sharp look-out should be kept for Grouse which are affected, and that these should be killed and cremated to prevent the diffusion of germs; but one cannot look over Grouse on a moor as if they were chickens in a poultry yard, nor diagnose their condition when on the wing at a distance. A great many diseased birds are sure to escape detection, until, too late, they are found dead or dying. Heather burning has much to recommend it, and, as at present advised, we have more faith in that and in the avoidance of overstocking than in any other so-called preventives. An examination of statistics has shown that in most cases the Grouse disease has appeared in the year following an unusually good season. The ground has been overstocked, and when the birds have exhausted the supply of good nourishing food in the shape of young heather they have to fall back on the old and rank stuff, which naturally proves deleterious.

From independent observation we are inclined to believe that the supply of drinking water may have something to do with it. Grouse, like other game birds, must have water, and so long as they can drink from the burns or the little rills of pure water that trickle down the hillsides all goes well; but should there come a dry summer, when the running water fails, they are obliged to have recourse to the small stagnant pools on the low ground, which may produce a species of typhoid comparable to that which attacks our troops on the march when compelled to drink unwholesome water. To substantiate this view it would be desirable to ascertain whether the outbreaks of Grouse disease have invariably occurred when the moors have been in this waterless condition.

BLACKCOCK SHOOTING

It is not every Grouse moor that is favoured with the presence of Blackgame. Much depends upon the situation, the proximity of larch and birch plantations in which to roost, and a sufficient extent of low-lying moist ground, devoid of heather, but abounding in rushes, whereon the Blackgame find acceptable food. In spring they feed much on the cotton grass (*Eriophorum vaginatum*) and the buds of the bog myrtle; in summer, heather tops, pine leaves and shoots; in autumn, acorns, oats, seeds of the rush (commonly called "sprit"), and berries of *Vaccinium myrtillus;* in winter, the catkins of the alder and berries of the rowan tree and juniper. From this it will be seen that Grouse and Blackgame do not feed exactly on the same kind of food, although in summer they may both be seen picking at the heather tops, and in autumn both visit the oat stubbles, and alight in company upon the stooks to pluck the ripening grain.

It has been asserted by some writers — for example, by Robert Gray, in his *Birds of the West of Scotland*—that Blackgame drive away the Grouse. I have never had any satisfactory proof of this. Having observed both species together on the oatfields, and seen them come over the guns

together in a Grouse drive, when a Blackcock would fall to the first shot and immediately afterwards a Grouse to the second barrel, I have long regarded them as dwelling in harmony, although, in consequence of the difference in their diet, they often affect quite different ground at feeding time. Long before Gray's work was published, Charles St John wrote: "I do not consider that they at all interfere with each other. The same description of ground is not liked by both kinds of birds. The Blackcock prefers rocky hillsides, with plantations, and boggy pieces of ground clothed with coarse grass and different kinds of marsh plants; while the Grouse delights in wide, open tracts, where the heather is not too rank, and where there is plenty of young heath, on the shoots of which they feed." But although the Blackgame will not drive away the Grouse, it is a fact that Pheasants will cause Blackgame to forsake their chosen haunts if introduced in the coverts to which they are in the habit of resorting. For this reason owners and lessees of Grouse ground where Blackgame are also to be found should think twice before they decide upon turning out Pheasants in the coverts merely with a view to make a variety in the bag during the shooting season. It is surely wiser to preserve the Blackgame where they exist in a country that suits them, and look for Pheasants later in the season in coverts where there are no Blackgame to be disturbed.

A good day's Blackgame shooting presupposes the presence of several guns, to be posted in likely

places for a shot, and the attendance of a sufficient number of beaters to drive the ground properly towards them. But it will be conceded by those who have ever tried it that there is a great charm in wandering alone, or at most with a couple of

A GROUP OF BLACKGAME.

beaters, through the birch woods in autumn, on the mere chance of getting a shot or two at such splendid game birds. If no such chance presents itself, much enjoyment may still be derived from the mere attempt to get a shot, while, should a brace be secured single-handed, one feels much prouder of the achievement than if one had assisted to fill the

game cart with Pheasants. The fact is, a Blackcock takes a deal more "getting," as the phrase is, than a cock Pheasant, and, when bent on such an errand single-handed everything must be shaped to that end. Other game for the moment must be disregarded. This, of course, does not apply when one is walking over an open moor, where Grouse and Snipe are likely to be met with, and where Black-game will often rise from the heather within shot, especially if one is shooting over dogs. But in the coverts, when the birds are sitting on the birch trees, or on the horizontal branches of the larches, listening to every sound that indicates the approach of an intruder, if a Blackcock is wanted, everything else should be unmolested. A crossing rabbit every now and then may offer a tempting shot, and a hare may sit up occasionally just to show where he is ; but a shot at either would be fatal to success with the nobler game.

Well do I remember an excursion of this kind one day towards the end of September. It had been raining all the morning, and Grouse-hawking, which was the order of the day, was voted impossible. The Hawks were all ready, and in great form, for they had been flying, some of them, nearly every day since August 12, and had acquitted themselves well. The rain had now come to spoil sport in that direction, and the question was, what was to be done? In the lone house on the moor there was no billiard table (that unfailing resource in other houses on a wet day), and, my host having decided to stay indoors and write letters, I was left

to my own devices, to amuse myself as best I could. Twelve o'clock had come and gone, and the weather showed no sign of improvement. A thin, drizzling rain descended gently, yet steadily. The moor steamed with the evaporating moisture, and the birch trees dripped heavily at every sough of wind. There were no Grouse crowing, and the outlook was dreary in the extreme. The few Blackgame that haunted the moor by day and roosted in the plantations near the house were not numerous enough to make it worth while to organise a big drive, and yet there was a possibility for a single gun, with luck, to get a shot or two by stratagem. Rather than stay indoors all day, I resolved to try it, and, flinging on an old shooting cape, sallied forth with two beaters. The state of the weather was such that it seemed likely the Blackgame would be sheltering in the woods, and the plan of campaign was soon settled. The most promising beat was a wooded ravine not far from the house, where the covert sloped down on either side to a burn, which debouched upon an open glade in which stood a big ash tree. My plan was to send the two beaters round to the far end of the wood, which they were to enter on opposite sides of the burn, and beat slowly towards the big ash tree, behind which I had elected to stand. It seemed to me that a Blackcock, on whichever side of the burn he might be found, would probably fly straight down the ravine towards the open moor, and would thus have to pass me on the way. At all events, this seemed

the most feasible project with only one gun in reserve.

Accordingly, we proceeded to carry it out, and for the time being the beaters disappeared from view. After a long and cheerless wait in the rain to give them time to get to the farther end of the beat, I was suddenly apprised of their approach by a shout of "Blackcock over!" "Mark Blackcock!" Anxiously I clutched the gun, pushing forward the safety-bolt; but from where I stood no Blackcock was to be seen, and I learnt afterwards that it had gone out on my right. A second bird soon afterwards came flying down the burn, but swerved to the left, and crossing an angle of the wood, passed out of shot, making for the moor, where I marked it down. The beaters were now within hail, and I had almost despaired of a shot, when a third Blackcock rose between us. The men both shouted, one on each side of the burn, and the bird, taking a middle course, came straight down the ravine in my direction, proving (in this instance at least) the fallacy of the proverb *in medio tutissimus ibis*, for in another second it had passed clear of the ash tree, and in response to the shot fell headlong into a patch of high bracken. This was encouraging, but the wood held no more; the beaters emerged, and we decided to follow the bird I had marked down on the moor, walking towards the spot in line. The previous disturbance, however, had unsettled him, or the wet heather made him restless. At anyrate, he rose out of shot, and went straight away, to pitch in some bracken on the side of a hill,

an easy spot to mark. Seeing that we were not likely to get near him by advancing, I halted the beaters, and expressed my intention of outgeneraling that wily Blackcock by stealing a march upon him. The beaters were to remain where they were for fifteen minutes, while I was to make a *détour* to the left, cross the moor, and then swing round to the right behind the shoulder of the hill on which our quarry was resting. This ruse had the desired effect. At the appointed time the beaters advanced, and I had not been long in ambush when the welcome cry was heard "Mark over!" In a few seconds the bird came swinging round the hill, following, as it seemed, the curve of the ground. As the gun went up he saw me and swerved, but too late to save himself. He was barely thirty yards off, and fell to an easy shot. The beaters were delighted, and so, in truth, was the shooter. To have found three Blackcock and killed two of them was considered good enough for one afternoon, and as we tramped back to the house, the thorough drenching which we had undergone was forgotten in the triumph of the moment.

THE DECREASE OF BLACKGAME

EXCEPT in Somerset, Devon, and the New Forest, where the commencement of Blackgame shooting is deferred until September 1, the season for this fine game bird opens on August 20 and ends with the shooting of Red Grouse on December 10. Sad to say, the sport which it now affords is not what it used to be. There was a time when Blackgame was spread all over the country from north to south, wherever the conditions were favourable to its mode of living, and its existence at the present time in the west of England, side by side with the red deer, is only a survival, owing to the unchanged nature of its ancient haunts. For we have to remember that the Blackcock comes of a very ancient race, indigenous to Britain long before the introduction of the Pheasant, which has since ousted it in so many directions. In proportion as the wilder parts of the country suited to its habits have remained unaltered, it contrives to hold its own, though in far fewer numbers than formerly. Needless to say, it is a moorland bird, often living where Red Grouse are, but oftener where there are none or very few, for the nature of its haunts is somewhat different. The Red Grouse lie out on the open moor, where they find no cover but heather in profusion; the

Blackgame affect the rough, hilly ground bordering cultivated land, where there are plantations of fir and birch, in which they perch like Pheasants, hiding in the thick bracken on the sides of the hills, drawing down to the rushy bottoms and moist ground about the burns, where they find most of their daily fare, and visiting the oatfields at twilight. They may even be found sometimes in fields of roots or potatoes, at some distance from their usual haunts, for they are strong fliers, and when crossing a valley or travelling at a height look something like Wild Ducks, flying in a straight line with outstretched heads and necks. In their fondness for acorns and oats they also remind one of Ducks, and, like them, come off the moor at sundown in search of this kind of food. In the early morning they may be seen flying out from the birch woods and making for the patches of bracken on the hillsides, their black and white plumage showing up finely against such a background in the gleam of the rising sun.

The best districts for Blackgame in Scotland, according to Mr Millais, are Dumfriesshire, Roxburgh, and parts of Perthshire, Inverness, and Aberdeenshire; and in England, Westmorland, Cumberland, and Northumberland, the borders of Durham and Yorkshire, Shropshire, and Staffordshire. Up to a comparatively recent date good bags of Blackgame were made on Exmoor and the neighbouring hills in Somersetshire, where, for example, on September 1, 1884, two guns killed twenty-seven brace. On Dartmoor and in the

New Forest Blackgame may still be met with, but a mere remnant of the ancient stock which has now but a precarious existence. In Wolmer Forest, although it became extinct in Gilbert White's day, it was re-introduced after the planting of the wood by Sir Charles Taylor, then ranger of the forest, and for some time throve exceedingly well. The parent stock of the present race came from Cumberland, and in 1872 an old man who had brought the birds to Wolmer was still living in the neighbouring village of Liphook. Had they been properly looked after, and the due proportion of the sexes maintained—one Blackcock to three Grey-hens—they would have increased and done well there, for the country is well suited to their habits; but in the belief that they had better be left alone, the cock birds were suffered to become much too numerous in proportion to the hens, with the result that the latter were so worried in the pairing time as to be unable to nest in peace, and thus the number of broods hatched annually declined, until at length they once more reached that verge of extinction from which they had been but lately rescued.

Blackgame, like Capercaillie, seldom stay long or thrive in places where they have been introduced unless the introduction means a restoration to ancient haunts. Experiments have been tried on the heath lands in Norfolk, on the Welsh hill-sides in Carnarvonshire, and in several parts of Ireland, but with only partial success, and that not maintained. Either the ground was not quite

suited to them, or they did not find the sort of food they like—cotton grass, heather shoots, buds of the bog myrtle, seeds of the rush (only to be found on low-lying boggy ground), catkins of the alder, berries of the rowan tree and juniper, leaves of polypodium, oats, and acorns. Where all or most of these are to be found Blackgame ought to do well, if there are also birch, larch, and fir plantations at hand. But foxes have to be reckoned with, and in parts of the country where they are more or less preserved for hunting they sadly interfere with the rearing of Blackgame. From other causes these fine birds have of late years become scarce even in Scotland, where in some districts they were once fairly plentiful. Sportsmen are apt to forget that Blackcocks are polygamous, and that there should always be at least three times as many hens as there are cocks. They shoot too many of the former, which, being much less wary, and keeping with their broods in the early part of the season, are more readily approached and afford easy shots at close quarters. Another cause of decrease is the number of barren hens that may be seen every year. From close observation of them in the breeding season Mr Millais is inclined to think that the period of fertility of the Greyhen is much shorter than with other game birds, lasting only two or three years, so that should indiscriminate shooting be carried on, only a small percentage of breeding birds are left to perpetuate their kind. One other cause of decrease remains to be considered, namely, that arising from the introduction of Pheasants into

coverts where Blackgame have previously held undisputed sway. This is sometimes done with the intention of adding variety to the game bag, and where there are suitable coverts the idea at first seems natural and feasible; but experience has shown that in proportion as the Pheasants increase in the woods the Blackgame gradually disappear. It is wiser to do without the foreign fowl, or shoot him elsewhere, and concentrate one's attention on developing the stock of native game birds in the shape of Red and Blackgame, Capercaillie, and Woodcock, which, together with Snipe, Golden Plover, and wildfowl in their proper seasons, will help to make as varied a bag at the end of the day as the keenest sportsman could desire.

THE DISTRIBUTION OF THE RED-LEGGED PARTRIDGE

THE Red-legged Partridge, like the Pheasant, is not indigenous to this country. Both have been introduced, though one of them existed here many centuries before the other. Of the Pheasant (*Phasianus colchicus*) we are only able to say that we are indebted for it to the Romans, but the exact date of its introduction is unknown. Of the Red-legged Partridge we are enabled to speak with greater precision; for, thanks to the records of some of the older writers on British ornithology, we can point to a period when it was unknown here, and can even fix approximately the date of its introduction. Further than this, it may be demonstrated that the birds which are now scattered over various parts of England, chiefly in the east and south-east, are not the descendants of one ancient original stock, but have become dispersed from several different centres of introduction. Four or five such centres at least may be indicated, and will be presently mentioned; but it will be convenient, in the first place, to refer very briefly to the period when the Red-legged Partridge was quite unknown here.

Sir Thomas Browne, in his account of Norfolk

birds, written about 1667, says: "Though there be here very great store of Partridges, yet the French Red-legged Partridge is not to be met with." This observation was probably suggested by some letter of his contemporary Willughby, with whom he corresponded, and who speaks of him as "my honoured friend Sir Thomas Browne of Norwich, a person deservedly famous for his skill in all parts of learning, but especially in natural history." Willughby's own views about this bird are expressed in his *Ornithologia*, which his friend John Ray translated and printed a few years after his death, viz., in 1678. He says (p. 23): "We have been informed that the Red-legged Partridge (*Perdix rufa*) is found in the isles of Jersey and Guernsey"; and further on (p. 167): "This kind is a stranger to England; howbeit, they say it is found in the isles of Jersey and Guernsey, which are subject to our king."

From these statements it may be taken for granted that, if Willughby and his friend Sir Thomas Browne (the leading naturalists of their day in correspondence with men of similar tastes in other parts of the country) were unaware of the existence here of the Red-legged Partridge, it could not have been introduced at that date. On the other hand, there is reason to believe that within a very few years later an experiment was made to establish the species in England, for Daniel, in his *Rural Sports* (vol. iii., p. 94), says: "So far back as the time of Charles II. (1660-1685) several pairs of these Red-legged Partridges were turned

out about Windsor to obtain a stock; but they are supposed to have mostly perished, although some of them, or their descendants, were seen for a few years afterwards." Unfortunately, Daniel has omitted to give his authority for this statement, which is the more to be regretted since it relates to what is believed to be the first attempted introduction of the

THE RED-LEGGED PARTRIDGE.

"red-leg" in this country—an experiment, in fact, which preceded those of which we have more certain information by about a century! In or about the year 1770 several noble sportsmen appear to have combined in importing eggs from France, and hatching them out under hens on their estates in different parts of the country. In East Suffolk the Marquis of Hertford and Lord Rendlesham turned out a good many at Sudbourn and

Rendlesham. In Northumberland, at Alnwick, their example was followed by the Duke of Northumberland. In Essex the Earl of Rochford tried a similar experiment at St Osyth, and in 1777 coveys were met with at Colchester, which, no doubt, had emanated from this last-named centre. In 1776 Sir Harry Fetherstonhaugh, at Uppark, Sussex, imported a lot of eggs from France; and from a correspondence with his mother, which has been preserved, it appears that several coveys were reared within the walled gardens of Harting Place and in the Park; and, although the experiment to establish them here permanently seems to have failed, there can be little doubt that from this new centre of introduction the county of Sussex was originally stocked. It is somewhat curious that from about 1820 until 1860 not a single "red-leg" was observed in this parish; but in the latter year several eggs of this species were found on a farm on the downs, and since that date a covey or two has been found every year, at first on the downs amongst the furze, heath, and juniper, and gradually they have found their way down into the valleys where, within the last few years, they have increased to a marked extent, though not to the prejudice of the English birds. In 1823 a fresh centre of dispersal originated in West Suffolk, at Culford, near Bury St Edmunds, where Lords Alvanley and De Ros turned out a number of "red-legs." Those previously introduced in the eastern division of that county increased rapidly, and spread from Aldeburgh to Woodbridge, and into Norfolk, where it is most probable that other

landowners, following the example thus set them, gave fresh broods their liberty, and so helped to stock the county.

If now we endeavour to trace the lines of dispersal from these various centres, it will be seen that there was at first no tendency on the part of the birds to move in any one direction ; for example, southwards, as many species move in autumn. They apparently dispersed in all directions. Those reared at Alnwick, it would seem, could not have increased to any great extent, for we find no record of their appearance in either of the adjoining counties of Durham or Cumberland, though twenty years ago they were reported as breeding in Westmorland, where it is possible they may have found their way from the Northumberland border.

Some of the Norfolk birds wandering northward to the shores of the Wash boldly crossed over into South Lincolnshire, where they are now fairly established, and have gradually found their way into the northern division of that county. Mr Cordeaux, of Great Cotes, near Ulceby, writing in 1874 (*Zoologist*, 1874, p. 4224), says of the Red-legged Partridge : "This bird is becoming quite common in that part of South Lincolnshire bordering the Wash and opposite the county of Norfolk. I am told it has of late years gradually extended its range in that district." In his *Birds of the Humber District*, the same writer says (p. 81): "The Red-legged Partridge is fortunately only an occasional wanderer into North Lincolnshire. I have seen birds that were shot in the neighbourhood of Ashby, near the

river Trent." Three years later, namely in October 1875, he was able to record the fact of two having been shot in his own neighbourhood, near Ulceby. Nor have the peregrinations of these birds northward been impeded by the Humber, which, notwithstanding its width, they must have crossed on their way into Yorkshire if (as stated by Messrs Clarke and Roebuck in their excellent *Handbook of Yorkshire Vertebrata*) there is no evidence to show that this species was ever introduced into that county. They observe that it is now "resident in various parts of Yorkshire, but in extremely limited numbers, and only very occasionally shot." If then it is not an introduced species in Yorkshire, but has found its way there naturally or accidentally, it seems more reasonable to assume that it has got there from Lincolnshire (in continuation of the progress from Norfolk) rather than from Northumberland through Durham, in which last-named county there seems to be no record of its appearance. At the same time it is quite possible that the few noted by Mr A. G. More (*Ibis*, 1865, p. 428) as "breeding very rarely in West Yorkshire," may have crossed the western border of that county from Westmorland, and so perhaps may be descendants of the Northumbrian stock originally introduced at Alnwick.

From Lincolnshire, also, it seems probable that the Red-legged Partridge has found its way into the adjoining county of Nottingham, where, we are assured on good authority, it appears to be increasing.

Mr A. G. More states (*l.c.*) that attempts to establish it in Derbyshire have failed, but we learn from Garner's *Natural History of Staffordshire* (p. 270) that it has been introduced at Teddesley in that county, though the author considers it "no desideratum for the sportsman."

In Lancashire the Red-legged Partridge was turned down at Rufford in some numbers by the late Sir Thomas Hesketh about 1862, and by the present baronet in 1879, but all have disappeared.

Messrs Coward and Oldham, in their *Birds of Cheshire* (p. 190), state that, although occasionally reared from introduced eggs, this bird has never succeeded in establishing itself in Cheshire. In Shropshire it appears to be almost as rare. A few have been shot at Churchstoke, near the Braidden, and at Weston Park and Willey, where the eggs were introduced, some were hatched in the nests of the Common Partridge.

In Cambridge, Huntingdon, Northampton, and Rutland, it is reported to be found, breeding occasionally; and as we proceed southward we find it in Berkshire, where (as already mentioned) it is said to have been introduced at Windsor in Charles the Second's time, in Buckinghamshire, Oxfordshire (where it is now resident and becoming common), and in Hertfordshire, where the present stock may perhaps be descended from those originally turned out by the Earl of Rochford in the adjoining county of Essex.

In the metropolitan county, where the farms are nearly all grass, and therefore not at all suited to

the requirements of this bird, it is nevertheless met with as a straggler from Hertfordshire and Essex. I have notes of its occurrence about Stanmore, Elstree, and Brockley Hill; and in September 1880, when shooting at Northaw, near Barnet, I picked up the remains of a "red-leg," which had evidently been killed and partly eaten by a Peregrine Falcon.

Some fifteen years ago the Red-legged Partridge was reported to be breeding occasionally in Kent, and probably it is now as well known there as it is in Sussex, to which county I have already referred. The author of the well-known *Ornithological Rambles in Sussex* (p. 169) states that:—

"In July 1841 two coveys of 'red-legs' were hatched under hens, and turned down on a manor in the parish of Kirdford, in the Weald of Sussex. They were observed there for nearly a fortnight, when they suddenly disappeared. During the following September a small covey was sprung near Bolney, about twenty miles further west, and a brace shot, probably a remnant of the Kirdford birds."

Here then we have another centre of dispersal in Sussex, besides that at Uppark already mentioned; and now it would seem that in this county the bird is universally distributed, for I have shot "red-legs" at such widely distant localities as Three Bridges, Frant, Uckfield, Hellingly, Hassocks Gate, West Grinstead, Midhurst, Harting, and Chichester.

In Hampshire, where it was unknown in the days of Gilbert White, who makes no mention of it

in his *Natural History of Selborne*, I have met with it about Petersfield and Butser Hill, as well as at Liss, which lies only four miles south from Selborne; and the late Mr Bell, in his edition of White's works (vol. ii., p. 365), refers to it as having been met with at Holybourne, about the same distance to the north of White's village. I have heard of it also at Alresford, and at Thruxton, near Andover, in which direction it seems to have worked its way to the Wiltshire downs. Writing from Calne, which is almost in the centre of the last-named county, the Rev. A. C. Smith says: —

"It is our good fortune in Wiltshire to know but little of this bird.[1] A few stragglers from time to time have made their way into the county, and have been shot at Winterslow, Draycot Park, and Winterbourne Monkton."

To these localities may be added (on the authority of Mr Im Thurn's list of the *Birds around Marlborough*) West Woods, Marlborough, Ogbourne, Maizey, and Rabley Copse. Doubtless it has been met with by sportsmen in many other parts of the county.

In Dorsetshire the Red-legged Partridge would seem to be by no means common, and Mr A. G. More states (*Ibis*, 1865, p. 428) that attempts to establish it in this county have failed. Pulteney, in his *History of Dorsetshire*, notices one that was shot at Upwey, near Weymouth; but Mr Mansell Pleydell, in his *Birds of Dorset*, states that it has failed to attain a permanent footing in the county.

[1] Because of its supposed enmity to the Common Partridge.

This is somewhat strange since parts of the county are well suited to its habits.

Proceeding westward, it may be mentioned *en passant* that the Red-legged Partridge has found its way to the Isle of Wight, where it has been shot at least on two occasions—once near Newchurch, and again near Freshwater. On both occasions only single birds were met with, probably stragglers from the mainland.

In Devonshire it is almost unknown. It does not appear in Dr Moore's List of Devonshire Birds (Trans. Plym. Instit. 1830), nor in Bellamy's *Natural History of South Devon*, published in 1837. In Rowe's catalogue of the birds of that county, however, it is stated that "a few specimens have been procured," though no localities are specified. One is recorded to have been shot many years ago on Waddle's Down, near Whitstone, Newton St Cyres; and Messrs D'Urban and Mathew in their *Birds of Devonshire* have noted a few more instances of its occurrence in the county.

According to the late Mr Rodd, the Red-legged Partridge is unknown in Cornwall (*Birds of Cornwall*, p. 77); but in the Appendix, which I furnished to his book, I pointed out (p. 310) that in the *Monthly Magazine* for December 1808 the author of a list of Devon and Cornish vertebrates (believed to be a Mr James, of Manaccan), remarks: "I have been told that Charles Rashleigh, Esq., of St Austell, procured from abroad some of the red-legged birds and turned them loose, and *that they have multiplied*," a statement repeated in the same

words by Polwhele in his *History of Cornwall.* It would seem that either a very few were turned out, which soon got dispersed and killed, or else that unfavourable circumstances prevented their increasing, and they gradually died off. Otherwise one would have expected that from this fresh centre of dispersal at St Austell, both Cornwall and Devon might have been stocked, and perhaps some stragglers might even have found their way into Somersetshire.

When Mr Cecil Smith, in 1869, published his *Birds of Somersetshire*, he was unable to include the Red-legged Partridge in his list. Since that date, however, stragglers have occasionally been met with in that county. In September 1879, Mr C. Fry Edwards, of The Grove, Wrington, shot a brace on the manor of Compton Bishop, where the keeper informed him that others fed in the coverts with the Pheasants. It does not appear that any had been turned out in the neighbourhood, and these birds, therefore, must have wandered a considerable distance. I subsequently received from Mr Cecil Smith the following note on the occurrence of this bird in Somersetshire:—

"On December 14, 1882, I saw at one of the poulterer's shops in Taunton a Red-legged Partridge, which had been shot that morning at Kingston, about three miles off, where another was seen at the same time, but not obtained. I was also informed that a small covey of four or five had been seen at Nynehead, near Wellington, but I do not know that any of them were shot. The occurrence of

these Red-legged Partridges near Taunton is worthy of notice, since, in all probability, they wandered there from some distance; for I have not heard of any being reared or turned out in this neighbourhood; nor are they so numerous in the neighbouring counties of Dorset or Wilts as to make it likely that they came from either of those counties. In the east of Somerset, near the Mendips, I am informed by Mr Compton (the author of an interesting little book on the parish of Winscombe, which has a chapter on the birds of that neighbourhood), 'that the Red-legged Partridge was introduced at Cheddar, about sixty-six years since, by Mr Cobley, who was afterwards vicar of the parish. The birds spread and drove the grey birds till they became so strong that to preserve any of the old species it was resolved to exterminate the foreigners. This was done, and the grey birds were restored, but some of the "red-legs" may have escaped. Mr Charles Edwards shot some on the cross-side of our hill about two years ago' [as above stated]. In regard to these Mr Compton says: 'that Mr C. E. Smith, of Maxe, thinks they must have come from some other source, as he has shot over this manor and district for many years, and had seen no "red-legs" for forty years.' Those seen or killed at Kingston and Nynehead, therefore, are not likely to be strangers from the Mendip side of the county, and I have never heard of any having been turned out in this neighbourhood. Indeed, the only ones I ever heard of about here were some which my father had hatched from some eggs he brought with

him from Paris in 1835; but these were kept in an aviary, and none escaped. So far as I remember, also, they did not breed."

It may have been from the Cheddar stock, above referred to, that representatives of the species found their way into the neighbouring county of Gloucester, although it is probable that Wiltshire also furnished originally some proportion of the birds now to be met with there. In the district lying between Cirencester and Cheltenham, "red-legs" are regarded as scarce, and not on the increase, the coveys being small and few in number; while on the Worcestershire side of the Cotswolds, in the Vale of Gloucester, it is said there are none to be found.

The further we proceed westward the scarcer do we find the Red-legged Partridge. In Herefordshire, for example, I am not aware that it has been met with more than once. Mr Ernest Armitage, writing from Dadnor, Ross, on October 7, 1881, says:—

"A friend of mine shot a Red-legged Partridge in this neighbourhood last week, and I am anxious to know whether this bird has been known to visit Herefordshire before. I have lived here all my life, and no one whom I have asked can remember ever having heard of one being killed here before, and I am sure no one has reared any. It was a single bird, and was shot in a meadow near Ross."

Still further westward, however, has the "red-leg" wandered, namely, into Brecon, which is the last county on my list.

Mr E. Cambridge Phillips, in his *Birds of Brecon*, says :—

"About six or seven years ago a young bird of this species was killed at Scethrog, near Brecon, by Mr Williams, of Manest, in a turnip field. About six months afterwards another was caught in a garden at Brecon, and was kept alive for some days. Mr Williams thinks that Mr Alfred Crawshay, of Talybont, turned out a couple of Red-legged Partridges about a year previously, and that they must have hatched a small brood. In the autumn following he believes there were four or five young ones, and he surmises that the bird he shot and also the bird caught in Brecon were two of them; the remainder were not seen afterwards. Mr Williams is an indefatigable sportsman, and has shot over the greater part of the county for the last thirty years, and these are the only two he has ever seen or heard of as being killed."

Thus far, then, are we enabled to trace the present distribution of the Red-legged Partridge in this country. From the foregoing remarks it will be seen that, although there has been of late years a tendency with this bird to move westward—a tendency which has been strengthened by the introduction here and there of imported birds or eggs—it is nevertheless still most plentiful (and sportsmen who enjoy a "Partridge drive" will add "most appreciated") in the eastern counties, where it was first introduced.

It may be remarked incidentally that this bird,

which is known to many people as "the Guernsey Partridge," is believed to be now extinct in Guernsey, and a few only are said to exist still in Jersey. On this point an interesting note by Mr Cecil Smith will be found in the *Zoologist* for 1880, p. 397.

In Scotland the Red-legged Partridge has once been met with. In January 1867 a solitary individual of this species was found with a covey of Common Partridges and shot within two miles of Aberdeen. It was supposed to be an accidental visitor from the south, no others having been seen or heard of before or since in any part of Scotland. Can it have been the last surviving descendant of the old Northumbrian stock reared at Alnwick?

Messrs Baikie and Heddle, in their *Historia Naturalis Orcadensis*, printed in 1848, state that in 1840 the Red-legged Partridge was introduced into Orkney with some of the common species by the Earl of Orkney, but that they were unaware what success had attended the experiment.

The Grey Partridge was introduced into Orkney long before the red-legged species. Low, in his *Fauna Orcadensis*, published in 1813, says :—

"Partridges were transported into this country some years ago and placed in Walls by the then proprietor, but I scarce think they have come to anything. I once saw one of them, which was shot by mistake in Hoy, which is about twelve miles from the place where they were first placed, but never heard of any other of the original colony (though it consisted of several pairs), or of their

offspring. I suppose they had been all destroyed by the ravenous birds, or wanted shelter to breed in, as the nature of that bird is to hide amongst corn, broom, whins, etc., none of the two last of which it could have here."

In Ireland the Red-legged Partridge is unknown, except as an introduced species in the county Galway.

The alleged enmity between Grey and Red-legged Partridges is a fiction. (See *The Zoologist*, 1889, p. 119, and Babington's *Birds of Suffolk*, p. 109.) So says Lord Walsingham, who calls it "a popular error" in his volume on "Shooting," in the *Badminton Library* (p. 144). The two species are found together in the same fields, and will sometimes lay in each other's nests. It is only in the pairing time that the cock birds become pugnacious, and drive away intruders.

CATCHING WOODPIGEONS

CONSIDERING the enormous flocks of Woodpigeons which visit us in autumn, to the great annoyance of farmers in many parts of the country, it is somewhat surprising that no systematic measures are adopted to thin their numbers and utilise them as food, especially as they are larger and of far finer flavour than the ordinary dovecote pigeons. Doubtless, a good many are shot by waiting and watching for them as they come in to roost in the plantations; but not one tithe of them are killed that might be procured in other ways, even when decoys are put out to attract them.

The question, "How to destroy Woodpigeons," is often asked by those who, from the tone of their inquiries, evidently look upon them with no friendly feeling; nay, obviously regard them as an unmitigated nuisance. In connection with covert shooting, some very useful hints are given by the authors of the Badminton volumes on "Shooting" on the subject of killing Woodpigeons, but these are only in relation to shooting, and nothing is said in regard to traps or nets.

In *The Field* of December 8, 1883, will be found an account by an eye-witness of the mode in which these birds are netted in the Pyrenees. Briefly stated, this is effected by suspending nets at

a good height between large trees in open spaces which have been cleared for the purpose in the woods.

At the height of about forty feet in each oak is fixed a spar, from which depends a rope, with the lower end pegged to the ground, and carrying a wooden travelling ring weighted with iron. Each spar has a block and halyards, the standing part of the latter being fast to the wooden ring. The nets, $1\frac{3}{4}$-inch mesh, and about fifty feet broad, have their upper corners hooked on to two of the wooden rings, and are thus hoisted into position; the lower ends are drawn backwards (*i.e.*, southwards) for about thirty feet, and pegged down; the two halyards of each net are hooked to a single trigger, and all is then ready.

Beaters with white flags are posted in trees for nearly a mile along the line of route in which the Pigeons are expected to arrive, and acting in concert at a given signal, wave their flags and shout, driving the birds down towards the nets, which are then pulled over by the chief operator. This, briefly described, is the plan pursued in the Pyrenees.

In the immense woods of fir and oak in "Les Landes," stretching for miles between Bordeaux and Bayonne, a very different though equally effective method is employed. As this may be new to many readers, I will endeavour to give some account of it, based upon a description furnished by an eye-witness, M. Louis d'Ambaloges.

The reader is to imagine himself in one of the great woodland tracts above referred to, about mid-autumn, when the Woodpigeons are coming from the north on their migration southward. A hut erected on rising ground faces the north, and outside of it, just in front, the pigeon-catcher, seated on a wooden stool, keeps watch for the arrival of the flocks. Along the vistas which are made on purpose through the surrounding firs and other trees, his view commands the north, as well as the sunrise and sunset, with a horizon sufficiently extensive to admit of his seeing the pigeons on the wing a couple of miles off. To be successful, a pigeon-catcher must have the eye of a hawk to detect the birds before they are over the hut. He must be quick and active enough to get inside in time, and find ready to hand the various cords that work the decoys, the sight of which causes the Wild Pigeons to stop, for they arrive on the scene with astonishing rapidity, pass on like a flash of lightning, and are seen no more, unless they are stopped at once.

The decoys, of which there are usually ten or a dozen, are live pigeons fixed at various distances on the trees around the selected spot, and tethered by light straps round the legs to a movable perch, which is set in motion by means of a line running to the hut. This causes them, when the cord is pulled, to open and close their wings with all the appearance and noise of a Pigeon about to perch, thus attracting the attention of the wild birds as they approach, and causing them to stop and alight.

The lines from all the decoys radiate towards the hut, where the pigeon-catcher sits, like a spider in his web, to work them one by one, or several at a time, as he may think fit. In short, the first stage of the business is then accomplished.

Let us suppose that the pigeon-catcher has just seen a flock of Pigeons coming, and has got back to his hut without being seen by them. He at once sets the decoys in motion, and the wild birds, descending to the lure, cover the trees around him. The next thing to be done is to make them descend to the ground at a spot prepared for them, where they can be covered by a net. To this end there is in the hut, tethered by the legs to a cross perch with a long handle, another decoy Pigeon, called *le Semée*. The part it plays is to be lifted up and down by the experienced hand of the pigeon-catcher, which results in the production of a sound like that made by a Pigeon when fluttering to the ground, and suggests to the new arrivals that they may descend without fear.

In order to keep them as quiet as possible (for good decoys should not move unless made to do so), all these tame birds are blindfolded, as hawks used to be formerly by a process called "seeling," which consists in tying up the eyelids with thread. Nor is this all. In a corner of the hut is a little palisade made of fir sticks fixed in the ground, which incloses several tame Pigeons called *Poulets*, since their office is to call the wild birds as a hen does her chickens. These, more fortunate than the other decoys, are neither blindfolded nor are their movements fettered.

They can walk about much as they like, but without being able to fly, for their wings are tied. Their inclosure, which is open at the top, has an aperture communicating with the ground outside by means of a little sliding bar, which is movable at pleasure by the pigeon-catcher.

When a lot of Woodpigeons have been lured down into the trees around, the so-called *Poulets* are let out through this opening one by one, as many as may be thought necessary. They go through a narrow passage which they are obliged to follow, one after another, at the end of which they come to the prepared ground, which has a turf bank all round it, high enough to prevent their getting out. Here, on little tufts of grass and herbage, purposely arranged, is scattered grain, wheat, or rye, which the *Poulets* pick up, running about here and there like Pigeons at liberty, and thus tempting the new arrivals, now looking at them from the tops of the trees, to come down and feed with them.

Through a hole in the hut a full view is obtained of the ground, only a few yards off. It is an oblong square about five yards by three yards, and is levelled and cleared of all superfluous undergrowth, with the exception of a few tufts here and there as above mentioned. The net when set is folded back to right and left on either side of the ground above the top of the tuft bank. When at length, by means of the decoys, the *Semée*, the *Poulets*, and a certain amount of "cooing" which the pigeon-catcher imitates to perfection, a number of Woodpigeons are induced first to alight on the trees and then to

descend to the ground; the man noiselessly seizes with both hands the strong wire with its wooden handle, which works the net, and, with a strong pull, draws it quickly towards him. Like lightning the net is unfolded, and the two wings of it, springing towards each other, completely cover the space within the turf banks, and envelop both the decoys and their wild dupes.

There are always a certain number of lookers-on in the hut, armed with guns, and the shooters, on perceiving the arrival of a lot of Pigeons, take deliberate aim at those nearest to them on the trees, and, waiting for a signal from the Pigeon-catcher, who first makes sure that everyone is ready, fire the instant the net is pulled. The guns go off as with one report, the net envelops a struggling, fluttering mass of birds, and everybody rushes out to secure the prisoners and pick up the slain.

By the beginning of November the migration of Pigeons is over; the autumn sport is at an end. But the birds reappear in February on their return northward, and the winter campaign begins and continues until the end of March; with this alteration, however, that the hut is made to face the south, for the fowler must keep a look-out in the direction in which the birds are expected to arrive.

In this, the extreme south-west part of France, for some years past, Pigeon-catching has increased to such an extent that, notwithstanding the fecundity of these unfortunate birds, their numbers are observed to be diminishing sensibly from year to year. The flocks now seen are much smaller, usually

numbering not more than five-and-twenty or thirty individuals, and often consisting of only fifteen, ten, or even half a dozen birds. Flocks of a hundred or two are seldom seen, and hardly ever four or five hundred as counted by the eyes of certain sportsmen who always see double.

On one occasion, however, when the migration was at its height, as many as 125 pigeons were taken at one haul of the net, threatening to break it by their struggling weight. But such a stroke of luck as this does not often occur. *La Chasse aux Palombes*, as the French call it, is nevertheless a pretty lucrative business. It is not unusual, in an autumn campaign, for a man to take from five to six hundred couple of Pigeons, the average price of which varies from 2 francs to 2½ francs, a good profit when the pigeon-catcher is working solely for his own benefit, for the expenses amount to very little, the materials costing less than 100 francs, or £4, and lasting for an indefinite period, while the rent to the landowner for the use of the ground is represented by the delivery of perhaps fifteen couple of pigeons a year. Again, these professional fowlers sometimes carry on their business for the amusement of the neighbouring landowners as far as Bordeaux, Bayonne, and Arcachon, when it is nearly all profit, for besides their share of the birds caught, they are paid for their time, and are allowed their board, lodging, and travelling expenses. So that they return to their families with well-filled pockets.

Most of the huts erected for the large landed

proprietors, especially in the "Grande Lande," are fitted up so comfortably as to enable the owners to spend the whole day there. They are divided into several rooms, with chairs and couches, a good fire burning, a table on which an excellent luncheon is served, books, newspapers, cigars, and cards. Nor is this all; the hut is often graced by the presence of the ladies, who arrive as usual in elegant toilettes, and some of whom are excellent pigeon shots, even at birds on the wing. At some of these places only the gun is used. This simplifies matters, for then only a hut is required, with a covered way leading to it, and seven or eight decoys placed on the trees to attract the Pigeons. Thus, those who are fond of shooting can enjoy themselves to their heart's content.

The Pigeons killed in autumn are the best, those obtained on the return journey in February and March being far inferior in condition; for they have got older, grown thinner, and have acquired an unpleasant taste, which is peculiar to all birds killed at the beginning of the nesting season. Not only is it a mistake on this account to kill them at this time of year, but, by destroying such numbers as they do when the birds are on the point of returning to their breeding haunts, they are thoughtlessly "killing the Goose with the golden eggs." Their capture in autumn is a very different matter.

If it is only for want of knowing how to set about it that no systematic capture of Woodpigeons is practised in this country, the method above

mentioned, like the different plan described in *The Field* of December 8, 1883, may be tried with advantage by those who, living in parts of the country where these birds are numerous in autumn and winter, may take good toll of the passing flocks.

Large numbers arrive here from the Continent, particularly in November. The home-bred birds, which begin nesting early in April, and rear several successive broods before September, quit their summer quarters about the end of the latter month, and go southward, always flying head to wind. Mr Abel Chapman, in his *Bird-life on the Borders*, gives a good account of the Woodpigeons from personal observation of their habits in the north of England. At some seasons, he says, and under certain conditions of weather, large flocks of these birds cross the North Sea, especially in November; but as no great number are bred in Norway, Sweden, or Denmark, it is probable that many of the visitors to England come from Scotland, merely shifting their quarters in search of food.

THE HORSE AND ITS HISTORIANS

If we consider its antiquity as a domesticated animal, and its great utility to man—greater, perhaps, than that of any other species—it is not surprising that the horse should have furnished a theme for writers in all ages and in every civilised country. The works which have been written on its natural history, anatomy, and physiology; its dentition, diseases, and cures; its use and treatment in relation to agriculture, cavalry, hunting, and racing; with treatises innumerable on equitation, breaking, training, and stable management; bits and bridles, saddles, and harness of every description—would form a library of no mean proportions. And should anyone feel disposed to collect all the works which have been written relating to the horse, he would have to provide shelf room for at least 4000 volumes.

I have been at the pains to count the titles quoted in the most recent bibliography on the subject,[1] and find that, exclusive of editions and translations, there have appeared, since the days of Xenophon (B.C. 380) down to the issue of the volumes on Hunting and Racing in the "Bad-

[1] *Works on Horses and Equitation: a Bibliographical Record of Hippology.* By F. H. Huth. Sm. 4to, pp. 440. London: Quaritch, 1888.

minton Library" (A.D. 1886), no less than 3800 works in eighteen different languages. I have been at the further trouble to apportion the titles of all these works (which in the bibliography referred to are quoted chronologically) amongst the nations which have produced them, with a view to ascertain as nearly as may be in what proportions each has contributed to the literature of the subject. The result is rather curious. The earliest works are in Greek, beginning with that by Kimon of Athens (B.C. 430) on the Veterinary Art, and including the well-known (and for the time they were written, really excellent) treatises by Xenophon (B.C. 380) on Horsemanship and on the duties of a Commander of cavalry (first printed at Florence in folio in 1516) besides the veterinary work of Hippocrates, the remarks on the horse in Aristotle's *General History of Animals*, and the little-known treatises of such writers as Sextus Julius Africanus (A.D. 225), and Ammianus Marcellinus (A.D. 360), many of them only fragments, and first made known through Latin translations. No modern Greek author appears to have written on the horse, and amongst the ancients we find but seven names of Greeks who have contributed to the literature of this subject. Works in Latin, though rather more numerous—and some of them, like those by Pliny and Aldrovandus, better known—do not exceed twenty-six, of which twenty-three were printed before 1784, and three only—in the shape of theses by candidates for degrees at German universities—during the present century.

Most people, without reflecting, might be disposed to assert, and to back their opinion, that more books on the horse have been written in English than in any other language; but, assuming Captain Huth's *Bibliography* to be tolerably complete, the careful analysis which I have made by reference to it shows that this impression is erroneous. English writers on hippology are, doubtless, numerous enough; but they do not stand at the head of the list. Up to the year 1886 they may be credited with 950 works, of which 185 were printed before 1800; 120 more before 1825; another 180 before 1850; and since that date no less than 464. If to these we add the 34 English books printed in America since 1850, and 1 in Australia in 1864, we have a total not far short of 1000. Of these it may be safely asserted that a large proportion at the present day would be difficult to meet with, and if found would prove of not much value. The names of those who have written for all time would not make a very long list, although it should be observed that many works of perhaps little intrinsic merit are sometimes of value as illustrating the growth of knowledge on the subject of which they treat.

The earliest English works relating to the horse are concerned chiefly with hunting, and cannot be said to refer so much to the horse individually, or his management, as to the wild animals which he enables his owner to chase. It is only because they relate to hunting that they have any claim to be included in a bibliography of hippology.

Amongst such works may be mentioned *The Art of Hunting*, by William Twici, written, originally in Norman French, about the year 1307, by the huntsman to King Edward II.; the treatise on hunting in the *Boke of St Albans*, 1486; and Turbervile's *Booke of Hunting*, 1575, a second edition of which appeared in 1611.

Amongst the earliest books on equitation by English writers we find Blundevile's *Foure chiefyst offices belonging to Horsemanship*, 1565; Astley's *Art of Riding*, 1584; Clifford's *School of Horsemanship*, 1585; Gervase Markham's *Discourse of Horsemanshippe*, 1593; and his *Cavelarie, or the English Horseman*, 1607, the last-named writer being also the author of several other works of a somewhat wider scope, such as the treatise on horses in his *Country Contentments*, 1611; *Markham's Maister Piece*, 1615; and his *Faithful Farrier*, 1635, all of which passed through several editions, and were very popular in their day. De Grey's *Compleat Horseman*, 1639, many times reprinted, was another popular book in its day. In Charles the Second's time (1683) there appeared rather a notable work on the *Anatomy of the Horse*, by Andrew Snape, farrier to his Majesty—sufficiently esteemed to be translated into French, and to pass through three or four editions. Nearly a century later, *An Anatomical Description of the Bones in the Foot of the Horse*, by James Clark, of Edinburgh (1770), and the same author's *Observations on the Shoeing of Horses*, attracted consider-

able attention, and were translated into German; while, later still, the name of Bracy Clark became well known through his numerous treatises on the pathology and anatomy of the horse, his first essay, *On the Bots in Horses*, appearing in 1796 in the third volume of the *Linnean Society's Transactions*.

The earliest treatise on horse-breeding by an Englishman, though it was written in Latin, is the work of Richard Sadler, published in 1587. The first English book on racing is one by Gervase Markham, entitled *How to Choose, Ride, Traine, and Dyet both Hunting and Running Horses*. It at first formed part of his *Discourse of Horsemanshippe*, 1593, but in 1596 was separately printed under the title just quoted. The same writer is to be credited with the first English work on "Cavalry," of which the title has been already given. In regard to the natural history and external form of the horse, we have perhaps the earliest English specimen in Topsell's *Historie of Foure-footed Beastes*, 1607, although manifestly a compilation from older authors of different nationality.

As already intimated, English books on the horse number not far short of a thousand, of which very nearly one-half has been printed since 1850; while, even as we write, fresh works and new editions are constantly appearing.

Our French neighbours are not far behind us; for I have been able to count 919 works by French authors on the horse, of which 105 were printed before 1800, 30 more in the next quarter of a

century, 204 in the succeeding quarter, and since 1850 no less than 580; so that, although prior to 1800 there were nearly twice as many English as French books on the horse, during the last five-and-thirty years the latter have exceeded the former by 116.

But in voluminous writing on this special subject, the Germans have distanced all competitors. Less active than our own countrymen before the commencement of the present century, when they had produced only 142 different works, they added 275 in the next quarter of a century, and 256 more by 1850, since which date a further contribution of 579 has been issued, making in all, to 1886, no fewer than 1252. In regard to the subject-matter of these, we find more books relating to anatomy, veterinary practice, and cavalry than exist in England, but fewer relating to hunting, and, as might be expected, to racing. Those dealing with equitation are perhaps a trifle more numerous, but on this subject, as well as on breaking, training, and stable management, the authorship is pretty equally divided.

The Dutch literature relating to horses is not very extensive, and Captain Huth's bibliography does not enable us to count more than 30 works in his language. Next to the French, who stand third on the list after the Germans and English, the greatest number of works have been written in Italian and Spanish, the former numbering 167, the latter 127. Not more than a dozen have been found in Portuguese; and in the Scandinavian

languages the number dwindles down from 62 in Swedish and the same number in Danish to 9 only in Norwegian.

In Hungarian we find 3; in Polish, 8; in Russian, 21; while the Eastern languages are represented by Persian, 8; Arabic, 1; and Hindustani, 1. In regard to these the numbers are probably under-estimated; for we should certainly expect to learn that in Persian and Arabic a good many treatises on horses, not easily accessible, are well known to Oriental scholars.

These statistics are of interest, as showing not only the importance attached to the history of the horse in all ages, but the shares in which different nations have contributed to the literature of the subject in all its branches. What a splendid monograph of the horse might now be prepared from the materials which have been shown to exist!

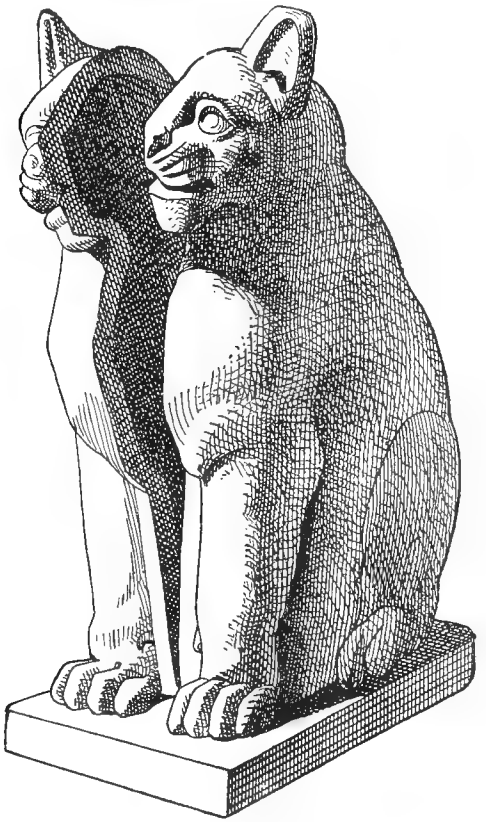
THE ORIGIN OF THE DOMESTIC CAT

To speculate upon the origin of our domestic animals is to enter upon a very wide field of research. Such an inquiry takes us to so many distant countries, and introduces us to so many different nations, that it at once inaugurates a study of geography, history, ethnology, languages, and literature sufficient to occupy the leisure hours of a lifetime. And after all this research, perhaps, we are unable to arrive at any satisfactory or certain conclusion. The fact is, that the reclamation of domestic animals from some original wild stock, whatever and wheresoever it may have been, dates so far back in the history of mankind that no written record of its origin can now be found. We can only surmise and argue from a few isolated facts collected from different nations at various periods of the earth's history.

The domestic cat, which we now know in such a great variety of forms, has doubtless not always been domesticated, but, like the dog, horse, and some other animals, has at some remote period been reclaimed by man's agency from a feral state.

But whence have arisen the numerous and remarkably different breeds which are now scattered all over the world? Have they originated from one wild prototype, whose descendants, by transportation

to different climates and forced existence under altered conditions of life, have, in the course of countless generations, become so modified as to

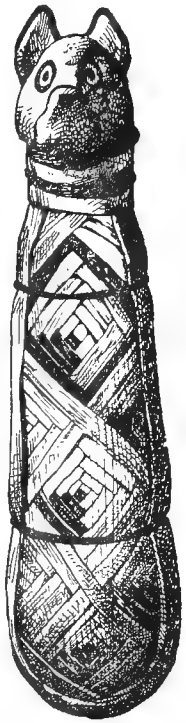


WOODEN MUMMY CASE FOR A CAT.

(*This and the next two blocks are reproduced from Champfleury's "The Cat," by permission of Messrs George Bell & Sons.*)

assume the appearance which they now present? Or are we to believe that more than one wild ancestor has contributed to the formation of the various

existing breeds, the variations presented by the wild types being still further increased by the hybridisation of their progeny? Their variability, their universal commixture, the perfect fertility of the produce of the most widely separated varieties, are arguments in favour of their being only one species. On the other hand, the remarkable difference between some of the varieties is the argument chiefly relied on for the plurality of stocks.



A MUMMIED CAT.

What was the appearance presented by some of the earliest known forms of the domestic cat amongst the ancients? If this question could be properly answered, we should have the best clue to its origin; but we have no precise information on the subject. We have it on the authority of the late Mr Blyth (one of the best informed zoologists of recent times) that domestic cats are mentioned in a Sanskrit MS. 2000 years old, and in Egypt their antiquity is known to be even greater, as shown by monumental drawings, and the discovery of their mummied bodies in very ancient tombs. Some of these mummy cases are very curious, being either of wood hollowed out in the shape of a seated figure of a cat, or of plaited straw of different colours, surmounted with a painted wooden head of a cat. For the Egyptians not only took great care of their

cats while alive, but honoured them when dead, going into mourning and shaving their eyebrows. The reason for this has been variously explained. According to Horapollo, the cat was worshipped in the temple of Heliopolis, sacred to the Sun, because the size of the pupil of the animal's eye is regulated by the height of the sun above the horizon. Thus the cat's eye was thought to symbolise the orb of day.[1] Plutarch, on the other hand, in his treatise on *Isis and Osiris*, states that the image of a she cat was placed at the top of the Sistrum[2] as an emblem of the Moon; partly, perhaps, because she moves about by night, but chiefly because her eyes dilate and grow large at the full of the moon, contracting again at the moon's decline.

The Egyptian name for the cat was *Chaou*, or, according to some Egyptologists, *Maou*, the latter name (like so many others in primitive languages) being onomatopœic, that is, imitative of the animal cry. The familiar name of "Puss," apparently, has also come to us from the Egyptian. In the British Museum may be seen several figures of the cat-headed goddess *Pasht*, under which name the moon was worshipped by the Egyptians, *Pasht* signifying

[1] Père Huc relates that he met some native naturalists at Pekin, who showed him how a cat might fulfil the purpose of a timepiece. They pointed out, he says, that the pupil of its eye contracted gradually at the approach of noon; that at noon it was like a hair or a very thin line traced perpendicularly on the eye; after mid-day it began again to dilate. The missionary then examined all the cats in the place, and concluded therefrom that it was past noon. They all presented the same appearance at the same time.

[2] *Sistrum* (Gr. σεισ τρον), a large rattle described by Plutarch as used by the Egyptians in the rites of Isis.

the face of the moon. The word is compounded of the consonants P, SH, and T. T is the Coptic feminine article, which, being discarded, the name is reduced to P SH. But the aspirate SH should be the tenuis S, and then the word would be PS, as in Hebrew, which may be pronounced *Pas* or

AN EGYPTIAN FOWLER'S CAT.
(*From a Tomb at Thebes.*)

Pus. It thus appears that our familiar name for the cat can boast of a very high antiquity.

One of the most ancient representations of the cat is to be found in the Necropolis of Thebes, which contains the tomb of King Hana, of the eleventh dynasty. A statue of this king represents him as standing erect, with his favourite cat Boubaki at his feet. It has been conjectured, from

a painting taken from a tomb at Thebes, and now in the British Museum, that the cat was taught by the ancient Egyptians to retrieve.[1] The painting in question depicts an Egyptian fowler gliding in a flat-bottomed boat through a reed bed, and throwing sticks at waterfowl (apparently with as much skill as a native Australian throws the boomerang), while a cat is represented as looking up at him with a wild duck in her mouth, and another bird, apparently a water-hen, under her fore feet. In the absence of any explanatory text, it looks as if the cat were retrieving the birds knocked down by her master; but, on the other hand, it is more likely that she was merely profiting by the opportunity to secure a meal for herself. Bearing in mind the cat's natural antipathy to water, it is difficult to believe that she could be induced to act the part of a water-spaniel, or retriever.

Neither the Cheeta nor the Caracal, both of which are used in India, Persia, and Syria for chasing and killing antelopes, hares, and the larger game birds, have ever been taught to retrieve. Having stalked and killed their prey, they commence to eat it, and have to be recaptured by their trainers, hooded, and led back to the bullock-cart, on which they are brought to the field. I have nowhere been able to find any description of a trained cat; although, in an Arabic treatise on hunting, written in the tenth century, and a few

[1] Wilkinson's *Manners and Customs of the Ancient Egyptians*, vol. iii., p. 42. Paintings of this kind belong to the eighteenth and nineteenth dynasties—1660 to 1440 B.C.

years since translated into French, there is a chapter on the Wild Cat, in which it is stated, without mentioning any date, that the first man who ever employed this animal for the chase was Benou Khafadja, and that the habits of the Cat are similar to those of the Cheeta. It is possible that the Egyptians may have so employed it, but there is no satisfactory evidence of the fact.

It does not appear that the Cat was known to the early Hebrews, or to the Assyrians, or to the Greeks as a domestic animal. The Greek vases in the British Museum with cat-like animals are F. 207, F. 126, E. 171, E. 172. The last is spotted and led in a string, probably intended for a hunting leopard. F. 207 shows a woman playing with a cat and a bird. F. 126 shows a man with a cat and a bird. E. 171 shows a cat on a stool. It has a long body, long tail and high legs, all characteristic of the cheeta. F. 126 is striped. This and F. 207 come as near to our domestic cat as could be expected. Professor Miall thinks a true domestic cat is indicated as an inhabitant of Greek countries from 400 to 300 B.C. but there is still room for doubt. The late Professor Rolleston[1] was at some pains to show that the domestic mouse-killer of the Greeks was not a Cat, but a Marten (*Martes foina*), the animal called γαλη by Aristotle,[2] and repeatedly referred to by Aristophanes[3] and other Greek writers as destroying mice, birds, and birds' eggs.

[1] *Journ. Anat. and Phys.*, 1868, November.
[2] *Hist. An.*, ii., 3, 5; vi., 30, 2; viii., 27, 2; ix., 2, 9; ix., 7, 4.
[3] *Pax.*, 1079, ed. Bothe.

The Romans, on the other hand, were early acquainted with the Cat as a mouse-killer. In the Campana tomb, Cervitri, which represents in its bas-reliefs and frescoes the *atrium* of the old Lucumon's house, there is painted on the ground-line an unmistakable Egyptian cat, with a mouse in her mouth. The Rev. W. Houghton, who has paid much attention to the natural history of the ancients, is of opinion that the Tyrrhene trade with Egypt must have introduced the sacred animal into the house of the Roman noble. He refers to a mosaic found at Pompeii, which "pictures to the life a splendid Persian (?) tabby, plotting against a duck hung up in the larder." Here is evidence, he says, that the early people, the Etruscans—to whatever race they belonged, or whatever language they spoke—were acquainted with the mouse-killing cat. Of course the Pompeian cat might be separated from the Etruscan one by hundreds of years; nevertheless, here we have evidence of the fact that the animal was domesticated occasionally, at anyrate, by the Romans at some time previous to the destruction of Pompeii and Herculaneum by the eruption of Mount Vesuvius in A.D. 79. Through the Romans, probably, domestic cats were introduced into Gaul and Britain, where such as made their escape, or were lost, would return to a feral state in the woods, and, pairing with the European Wild Cat, which was formerly very common in England, would, in the course of generations, lose its similarity to its Egyptian ancestor, and gradually assume the

appearance of our own wild cat, which is now so marked in the variety known as "tabby."[1]

An argument in support of this view is to be found in the fact that in India, where no wild species of the cat resembles *Felis catus* in colour and markings, the tabby variety of domestic cat is unknown, and the household breeds in that country resemble the native wild species—*e.g.*, *Felis chaus* and *Felis ornata* — with which imported tame animals have undoubtedly crossed (Blyth, *Journ., Asiatic Soc. Bengal*, xxv., p. 441). Similarly in South Africa the wild *Felis caffra* has impressed its character upon imported tame varieties; and the domestic breeds in South America, according to Azara, have been in the same way affected by inter-breeding with certain wild species peculiar to that country. From these several cases, to adopt the words of Darwin, "we see that in Europe, as in Africa and America, the common cat, which lives a freer life than most other domesticated animals, has crossed with various wild species, and that in some cases the crossing has been sufficiently frequent to affect the character of the breed."

As to the particular species of cat which was domesticated by the ancient Egyptians, opinions differ. Many naturalists favour the view that *Felis chaus*, a widely distributed species extending from N.E. Africa to India, was probably the

[1] The origin of the word "tabby" is perhaps not generally known. It is a corruption of the Turkish *utabi* (O. Fr. *tabis*, Span. *tabi*), a particular kind of waved silk imported from Bagdad, and so named after the locality where it was made.

ancestor of our domestic race, although no such colouration is to be found in European cats, and so far as external appearance goes, *Felis caffra*, the Caffer cat, is more like our "tabby," though a larger animal with longer legs.

Strange to say, the remains of *Felis caffra* (according to Professor Boyd Dawkins) have been found in a fossil state in deposits of the Pleistocene age in this country, namely, in Bleadon Cave, Somersetshire, and elsewhere. A great French naturalist, however, De Blainville, who made a critical examination of the mummied bodies of several cats brought from Egyptian tombs, arrived at the conclusion that they represented three different species.[1] Hence it cannot be affirmed with certainty that any one of these three has given rise to the domestic type of cat with which we are now so familiar.

These reflections lead to a general consideration of the relationship which exists between the domestic cat and the different wild species of *Felis* which are distributed over the earth's surface.

The Arabic writer on hunting, already mentioned (by name Sid Mahomed El Mangali), gives us the view which was prevalent among the Arabs eight hundred years ago concerning the origin of the cat. They said that as the buzzard was made out of the clay which remained over after the falcon had been created, so the cat was made out of the clay which was left after the creation of the tiger—a truly quaint theory of evolution, no doubt, but one

[1] *Osteographie des Mammifères*, "Felis," pp. 65, 85, 89, 90, 175.

which shows us that, even so long ago as the tenth century, the Arabs, without knowing anything of comparative anatomy, had a very good notion of the natural affinities of animals. Indeed, it may be said now as then, that, so far as regards general structure, the cat is a tiger on a small scale.

In considering this and other relationships, we must note the position which the great cat family (Felidæ) occupies in the order Carnivora in relation to other carnivores. The land carnivora (or Fissipedia, as they are termed, to distinguish them from the Pinnipedia or seals) may be conveniently separated into three large groups or sections, the Æluroidea (comprising the Felidæ, Hyænidæ, Viverridæ, and a few other abberrant forms), the Cynoidea (which includes all the different species of dog-like animals), and the Arctoidea, comprehending the Ursidæ, Mustelidæ, and Procyonidæ. This is not a mere fanciful arrangement. A careful study and comparison of the anatomy of most of these different forms (whenever opportunity has favoured the examination of specimens) has resulted in the publication of descriptions and figures, by means of which we are able to trace the relationships here indicated. It need scarcely be said that the cranial characters, and especially the dentition (as indicating the animal's mode of life and the nature of its food) have been regarded as most important in determining its zoological position; and thus this grouping (artificial or arbitrary as it may at first sight appear) really indicates, in the case of each of these three sections, the possession by its members of certain

characters in common, which link them as it were together, and which, being well marked, are easily recognisable.

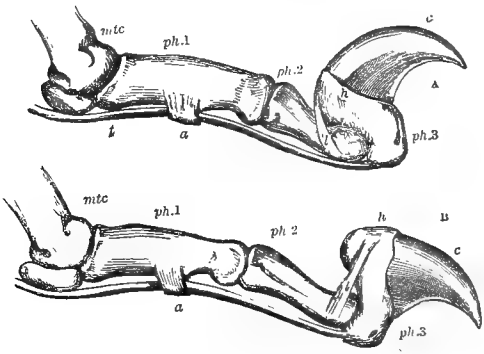
The characters which serve at once to distinguish the Felidæ are the looseness of the skin (purposely so designed), the flexibility and strength of the spine, the small head, capable of being turned rapidly in any direction in search of prey, and the wonderful arrangement of levers exhibited in the limbs, affording the greatest amount of strength combined with elasticity.

In the skeleton of the Felidæ there are two points of importance which indicate their zoological position, and are correlated with their natural habits—namely, (1) the character of the skull, and (2) the structure and arrangement of the bones of the toes.

1. The skull is remarkable for the well-developed bony ridges which serve for the attachment of the great jaw muscles, the immense size of which causes a corresponding increase in the width of the zygomatic arches. As in all Carnivora, the *facial* portion of the skull is short in relation to the *cranial* portion, the reverse being the case, *e.g.*, with the Herbivora. This is correlated with the different mode of feeding in these two different orders of mammals, the flesh-eating animals requiring sharp cutting teeth, the herbivorous ones flat grinders. Hence, in connection with this, we find the form of the condyle, or bony projection of the lower jaw, so modified in the Carnivora as to admit of little or no *lateral* movement as in the

Herbivora, but only an up and down chopping or cutting motion, while the teeth, especially the canines, are enormously developed. Again, the almost globular form of the bulla tympani, and the division of the cavity into two portions by a bony partition, are also distinctive characters of the Felidæ.

2. The structure of the foot is peculiar, inasmuch



MECHANISM OF THE CAT'S CLAW.

(Twice Natural Size. From a Sketch by T. J. Parker.)

A., with the claw retracted; B., with the claw exserted; *mtc.*, the metacarpal; *ph.* 1, the first; *ph.* 2, the second; *ph.* 3, the third phalanx; *h.*, the bony "hood"; *c.*, the claw; *l.*, the elastic ligament; *t.*, the flexor tendon; *a.*, a ligamentous loop, through which the tendon passes.

as the cats (with the exception of the Cheeta) are the only animals which possess the power of retracting the claws. This is effected by means of a peculiar modification and arrangement of the second and third joints of the toes, the *third* being pulled back by an elastic ligament upon the *second*, when not forcibly extended by means of the strong flexor muscles which run along the under surface of the foot.

From a general review of the existing species of Felidæ, it appears that they may be conveniently grouped into three well-defined genera—(1) The typical genus *Felis*, which includes by far the greatest number of species (thirty-four); (2) the genus *Lyncus*, comprising the short, thick-set animals, with large tufted ears and short thick tails (six species); and (3) the genus *Cynælurus*, which includes but a single aberrant form—the Cheeta—a small-eared, long-legged, and long-tailed animal, differing from all other cats in its dentition and in having claws which are not retractile.[1]

As to the geographical distribution of the Felidæ, representatives of the family are to be found in all parts of the world, with the exception of Australia, New Zealand, South-east Malayasia, the Polynesian Islands, Madagascar, and the Antilles.

By far the largest number of species occur in Asia, where at the present time at least five-and-twenty different kinds are known to exist. The most notable of these are the Lion, Tiger, Leopard, or Panther, Snow Leopard, Clouded Tiger, four of species Lynx, and the Cheeta or Hunting Leopard, the remainder consisting of some sixteen or seventeen species of smaller cats.

In the south-east of Asia the Lion and Tiger meet on common ground. The Lion, however, has his stronghold in Africa, and is comparatively scarce to the east and north of Guzerat. The Tiger, on the other hand, is unfortunately but too numerous

[1] The popular name for this animal is derived from the Hindustani *Chita*.

in Asia, especially in India, where the number of men and cattle annually carried off by these animals is something enormous. During the year 1885, in the central provinces alone 221 tigers were killed, and 260 the previous year. Leopards also are very destructive, though they kill smaller prey in the shape of antelopes, goats, sheep, and dogs.

There appears to be still some difference of opinion amongst Indian sportsmen whether the Leopard and Panther are two distinct species, or merely small and large varieties of the same animal. The former view is expressed by Captain Baldwin in his excellent book on the *Large and Small Game of Bengal*, following the opinion of Hodgson, Sir Walter Elliot, and others, while the contrary view advocated by Blyth and Jerdon is maintained by Colonel Kinloch in his beautifully illustrated volume on *Large Game Shooting in Thibet, the Himalayas, and India*. He says:—

"I have seen many live specimens, both wild and in confinement; I have inspected hundreds of skins from various parts of India; and I have heard or read most of the arguments in favour of and against the theory that there is more than one species; and I have come to the conclusion that there are not sufficient grounds for separating the panthers or leopards into anything but *varieties*. Even these varieties are not, in my opinion, sufficiently defined to be looked upon as permanent."

The Ounce or Snow Leopard (*Felis uncia*)—so called from its living amongst the snow-clad ranges

of Kashmir, Thibet, and the Altai Mountains—is one of the most beautiful of the cat tribe, and one of the most difficult to procure. The well-nigh inaccessible nature of its haunts, where it preys chiefly on the wild sheep, protect it from the rifle of eastern sportsmen, with whom it is always a much-coveted prize; for it has a beautiful fur, soft and thick, to protect it from the cold climate in which it lives, while its pale colour, almost white, with duller spots than those of the Leopard, favours its concealment when stalking its prey or being itself stalked by man.

Captain Baldwin, in the work already referred to, has a most interesting chapter on this animal, in which he narrates the efforts he made, when in Thibet, to bring up a Snow Leopard cub which had been caught alive, and which he was anxious to rear for transport to our Zoological Gardens. It fell a victim, he believed, to poison at the hands of a native servant, who found it gave too much trouble to look after. He also relates very graphically how a fine old Snow Leopard, believed to be the mother of the cub in question, was killed by one of a party of Thibetans in a curious and unexpected way. It was seen at a little distance, basking on a ledge of rock at the mouth of its den, and apparently asleep, when the native, looking over upon it from above, dropped a large stone with such precision that it struck the sleeping animal in the middle of the back and broke its spine. Captain Baldwin, who only heard of the occurrence some days afterwards, purchased the skin, which unfortunately had been very unskilfully preserved.

Amongst other notable cats of Asia, two especially deserve mention, on account of the curious way in which they have been made useful to man; these are the Cheeta, or Hunting Leopard, and the Caracal, or Desert Lynx. Both these animals are trained in India, Persia, and Arabia to catch game for their owners — the Cheeta taking deer and antelopes, the Caracal taking partridges, francolin, and other winged game. The practice of taming and training these animals in the East is of very ancient date. The Cheeta is figured on Assyrian bas-reliefs in the act of seizing an antelope, and is represented also on Egyptian monuments dating about 1700 B.C., amongst the animals brought in by way of tribute to the kings of Thebes by the black tribes of the Upper Nile, led in a slip with a very ornamental collar. The Arabian writer on hunting of the tenth century, to whom I have already referred, devotes several pages to the subject, pointing out the qualities and peculiarities of a good leopard, and giving instructions for taming and training him, deprivation of food and sleep being the chief means employed. The Crusaders found this kind of sport much in vogue with the Mussulman princes of Syria, and the Emperor Frederick II., who made a journey to Jerusalem in 1228, mentions, in his treatise *De Arte Venandi*, both the Cheeta and the Lynx amongst the animals used for hunting. In the fourteenth century the sport was introduced into Europe, first in Italy, and afterwards, in France, where it was patronised by the French Court until the days of Henry IV.

The last trained Leopards seen in France were those brought by Marie de Medicis from Florence in 1601. After that date they were no longer to be seen, either in France or Italy, although in Germany the sport was revived by Leopold I., who died in 1705.[1]

Next to Asia, the greatest variety of cat-life exists in Africa and South America, in each of which continents some nine or ten different species are to be found. Several of the African species are to be found also in Asia, as the Lion, Leopard, Chaus, and Caracal. In South America we find some very distinct forms, as the Puma, the Jaguar, the Ocelot, and in Mexico and Central America those singular-looking, uniformly coloured, long-bodied and long-tailed cats, the Eyra and the Jaguarundi. North America comes next with five species, including (besides the Puma, Jaguar, and Ocelot, all widely distributed in the New World) two species of Lynx, one of which, the Bay Lynx (*Lyncus rufus*), is the "cat-a-mountain" of the old voyagers, a name evidently corrupted from the Mexican *Gato montes*. Lastly comes Europe with one species of Wild Cat (*Felis catus*) and four species of lynx, two of which must be considered as decidedly rare. To us in England the species of all others which possesses the most interest is undoubtedly the Wild Cat, since it was not only extremely common at one time in this country, but even still lingers in reduced numbers in the northern parts of Scotland.

[1] For further historical notices of the Hunting Leopard in Europe, see the chapter on "Hunting with the Cheeta."

By some authors it is regarded as the original stock from which our domestic cats are descended; but although, through repeated crossing with this

A WILD CAT.

indigenous wild species, the breed of domestic cats has been materially affected, it is most probable that the earliest domesticated individuals seen in Britain were not reclaimed kittens of the native

wild species, but were imported from abroad, very likely by the Romans. This view seems strengthened by the fact that the early Britons set great store by their cats; fixed their value by law, according to their age; and imposed penalties for destroying them. This they probably would not have done if they were common, or could be easily procured by rearing wild kittens and taming them. According to the Welsh laws of Howel Dha, who died in 948, after a reign of thirty-three years over South Wales and eight years over the whole Principality, the value of a kitten before it could see was fixed at a penny; after it had caught a mouse, twopence; and when it had become an expert mouser, fourpence, which in those days, it must be remembered, was a large sum. If anyone killed a cat belonging to the king's household, the animal was suspended by its tail in the granary so that its nose just touched the floor, and the delinquent had to forfeit, by way of fine, as much corn as, when heaped up on the floor, would exactly hide the cat from view.

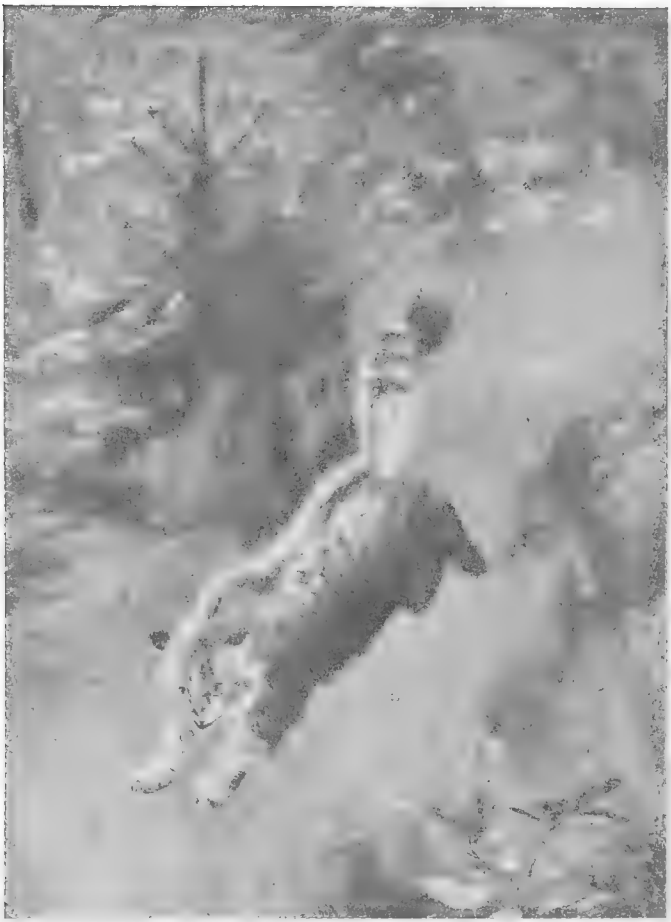
In England in former days the Wild Cat was included amongst the beasts of chase, and is often mentioned in royal grants giving liberty to inclose forest land and license to hunt there. Extracts from several such grants will be found in *The Zoologist* for 1878, p. 251, and 1880, p. 251. Nor was it for diversion alone that the Wild Cat was hunted. Its fur was much used as trimming for dresses, and in this way was worn even by nuns at one time. Thus in Archbishop Corboyle's "Canons," *anno*

1127, it is ordained "that no abbess or nun use more costly apparel than such as is made of lambs' or *cats*' skins," and as no other part of the animal but the skin was of any use here, it grew into a proverb that "You can have nothing of a cat but her skin."

The Wild Cat is believed to be now extinct, not only in England and Wales, but in a great part of the south of Scotland. Some years ago a Scottish naturalist resident in Stirlingshire (Mr J. A. Harvie Brown) took a great deal of trouble, by means of printed circulars addressed to the principal landowners throughout Scotland and the Isles, to ascertain the existing haunts of the Wild Cat in that part of the United Kingdom. The result of his inquiries, embodying some very interesting information, was published in *The Zoologist* for January 1881. The replies which he received indicated pretty clearly, although perhaps unexpectedly, that there are now no wild cats in Scotland south of a line drawn from Oban on the west coast up the Brander Pass to Dalmally, and thence following the borders of Perthshire to the junction of the three counties of Perth, Forfar, and Aberdeen, northward to Tomintoul, and so to the city of Inverness. We are assured that it is only to the northward and westward of this line that the animal still keeps a footing in suitable localities, finding its principal shelter in the great deer forests. Thus we see the Wild Cat is being gradually driven northward before advancing civilisation and the increased supervision of moors and forests. Just as the Rein-

deer in the twelfth century was driven northward from England and found its last home in Caithness, and as the Wolf followed it a few centuries later, so we may expect one day that the Wild Cat will come to be numbered amongst the "extinct British animals." The writer of the article "Cat" in the *Encyclopædia Britannica* expresses the opinion that the Wild Cat still exists in Wales and in the north of England, but gives no proof of its recent occurrence there. From time to time we see reports in the newspapers to the effect that a Wild Cat has been shot or trapped in some out-of-the-way part of the country; but it usually turns out to be a large example of the domestic cat, coloured like the wild form. It is remarkable that when cats in England are allowed to return to a feral state, their offspring, in the course of generations, show a tendency to revert to the wild type of the country; partly, no doubt, in consequence of former inter-breeding with the wild species when the latter was common throughout all the wooded portions of the country, and partly because the light-coloured varieties of escaped cats, being more readily seen and destroyed, are gradually eliminated, while the darker wild type is perpetuated. The great increase in size observable in the offspring of escaped domestic cats is no doubt due to continuous living on freshly-killed warm-blooded animals, and to the greater use of the muscles which their new mode of life requires. In this way, I think, we may account for the size and appearance of the so-called "wild cats," which are from time to time reported south

of the Tweed. Perhaps the last genuine wild cat seen in England was the one shot by Lord



WILD CAT SPRINGING ON ITS PREY.

Ravensworth at Eslington, Northumberland, 1853;[1]

[1] *Trans. Tyneside Nat. Field Club*, 1894, vol. vi., p. 123.

although so late as March 1883 a cat was shot in Bullington Wood, Lincolnshire, which in point of size, colour, and markings was said to be indistinguishable from the wild *Felis catus*. Bullington Wood is one of an almost continuous chain of great woodlands, extending from Mid-Lincolnshire to near Peterborough. Much of the district has never been preserved for game, and keepers are few and far between; hence the wild animals have enjoyed an almost complete immunity from persecution. Cats are known to have bred in these woods in a wild state for generations, and there is no improbability that the cat in question may have descended directly from the old British Wild Cat. Under all the circumstances, however, it seems more likely to be a case of reversion under favourable conditions from the domestic to the wild type.

In Ireland, strange to say, notwithstanding reports to the contrary, all endeavours to find a genuine Wild Cat have failed, the so-called "wild cat" of the natives, proving to be the "marten cat," a very different animal.

We thus come back to the question with which we started, namely, the question of origin of the domestic cat, and the conclusion, I think, at which we must arrive is, that although *Felis catus* has contributed to the formation of the existing race of domestic cats in Europe, it is not the sole ancestor. Several wild species of Egyptian and Indian origin having been ages ago reclaimed, the interbreeding of their offspring and crossing with other

wild species in the countries to which they have been at various times exported, has resulted in the gradual production of the many varieties, so different in shape and colour, with which we are now familiar.

A MODERN VARIETY.

HUNTING WITH THE CHEETA

MANY animals of the cat tribe, from the lion to the domestic cat, have been trained to the chase from a very early period, and some of them are still used for that purpose in certain countries of the East. The Lion, Tiger, Leopard, and especially the Cheeta, as well as the Caracal, or Desert Lynx, have all played their parts in the chase in Asia and Egypt at different periods. Hunting with the Cheeta was even introduced into Europe during the fourteenth century, and Leopards (as Cheetas were formerly called, from the supposition that they were a cross between the lion and the panther, *leo* and *pard*) figured in the hunting establishments of the French kings and certain Italian princes between the end of the fifteenth and beginning of the seventeenth centuries.

We learn from Sir Gardner Wilkinson's work that the ancient Egyptians, who must have been skilful in taming and training wild animals, "hunted with lions which were trained expressly for the chase, like the Cheeta or hunting leopard of India, being brought up from cubs in a tame state." This assertion is disputed by Lenoirmont, in his *Recherches sur l'Histoire des Animaux Domestiques*, although he admits the no less remarkable fact that lions were formerly employed in war.

When Ælian wrote, in the third century of our era, the natives of India knew how to train the black-maned lion of that country for the chase, leading it in a slip. The Greeks and Romans also tamed wild beasts of various kinds, including lions and tigers, the Romans from the time of Marc Anthony (as we learn from Pliny) employing lions to draw processional cars, although it does not appear that they ever used them for hunting. Many instances of the use of lions by the Roman emperors for drawing chariots will be found quoted by Ranking in his *Wars and Sports of the Mongols and Romans* (4to, 1826, pp. 320, 321); amongst others a quotation from Capitolinus, to the effect that Gordian possessed no less than sixty lions and thirty leopards tamed.

With regard to the Tiger, we learn from Marco Polo that the Great Khan of Tartary had a number of leopards and lynxes trained to hunt, as well as several "great lions" (as he terms them) with splendidly coloured skins striped with black and white, which were trained to take wild boars, wild cattle, deer, roebucks, and other beasts, and were taken to the field in cages drawn on carts. Although this description evidently points to the employment of tigers in the chase, it is very difficult to believe that men in any age could be found to tame and handle so ferocious an animal.

The training of the Cheeta and the Caracal, or Desert Lynx, would be a much simpler matter, and, as we know by the relation of modern travellers who have been eye-witnesses of the sport, is still

practised in Persia and Syria; while numerous descriptions of the chase have been written by English sportsmen in India.

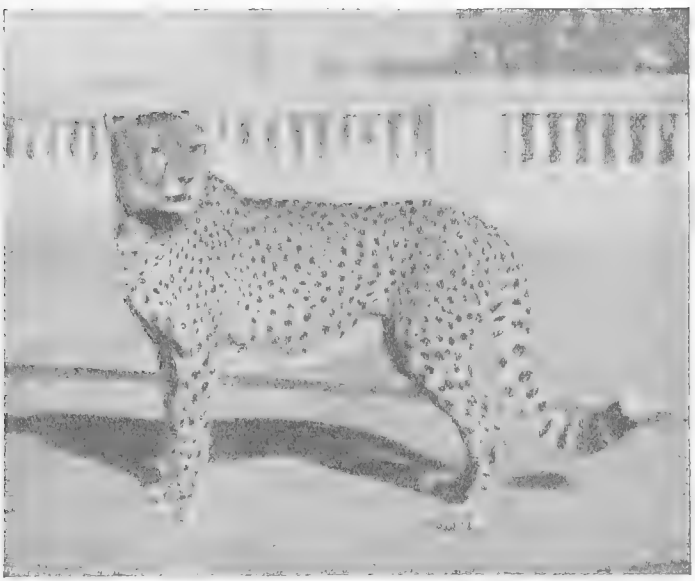
In the *Revue Britannique* for October 1885 will be found a very interesting article on "Hunting with the Cheeta," written by Baron Dunoyer de Noirmont, the highest authority in France on the history of the chase. In this article he traces the progress of this kind of sport from the earliest times, and gives some curious details on the subject, collected from various authors, ancient and modern. The name Cheeta is the ordinary English representation of the Hindustani word, of which the modern spelling in European characters is *Chita;* the Arabs call it *Fadh.* The employment of this animal for the chase seems to have been known in the East from a very early period. It is figured on Assyrian bas-reliefs in the act of seizing an antelope, and is represented also on Egyptian monuments dating about 1700 B.C., amongst the animals brought in by way of tribute to the kings of Thebes by the black tribes of the Upper Nile, led in a slip with a very ornamental collar.

The Crusaders found this kind of sport much in vogue with the Mussulman princes of Syria; and the Emperor Frederick II., who made a journey to Jerusalem in 1228, and came back half a Saracen, mentions in his treatise *De Arte Venandi* both the Cheeta and the Lynx amongst the animals used for hunting.

A celebrated Arabic writer on hunting and hawking—Sidi Mohamed el Mangali—a French

translation of whose work I have reviewed in another volume,[1] enters in great detail upon the mode of taming and training the Cheeta, as practised in his day, about A.D. 1348, deprivation of food and sleep being the chief means employed.

Tippoo Sahib, the last Sultan of Mysore, who



THE CHEETA.

was killed at the taking of Seringapatam in 1799, was, like most eastern potentates, an enthusiastic sportsman, and kept no less than sixteen trained Cheetas. Two of these were sent to England, and were kept at Windsor until they died.

This kind of sport is still practised in India,

[1] *Essays on Sport and Natural History*, pp. 362-370.

just as in the days of Tippoo Sahib. The Cheeta, hooded like a falcon, and held by a stout collar and cord, is carried to the field on a bullock-cart, on which he sits side by side with the native keeper who has charge of him, and who pats and caresses him from time to time. The cart proceeds across country until any deer or antelopes are seen. The driver then advances circuitously, gradually narrowing his circle until he gets within one or two hundred yards of the nearest antelope, which, accustomed to see the native carts of the country, does not at first take much notice of that which carries the Cheeta. As soon as he is near enough the driver stops, and the keeper removes the hood of the Cheeta, which springs lightly from the cart, and commences his stalk, availing himself of every bush and hillock between himself and his prey as he stealthily approaches it. When within forty or fifty yards he jumps up, and in a series of magnificent bounds dashes at the nearest antelope, and generally brings it down, fastening at once upon its throat and killing it. It sometimes happens, however, that the intended victim gets too good a start, and the Cheeta, failing to overtake it within a reasonable distance, gives up the chase and returns sulkily to his keeper, who feeds and rehoods him. In the event of a kill, the keeper runs up with a tin bowl, and, cutting the deer's throat, fills the bowl with the blood, which he allows the Cheeta to lap up, until, watching a favourable opportunity, he slips on the hood and leads the animal back to the cart. The sportsmen who go

out on these occasions are either mounted on horseback, or go in pairs on bullock-carts like that which carries the Cheeta.

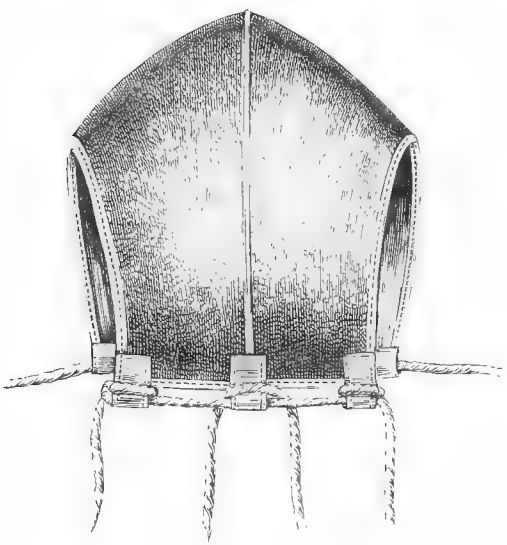
With regard to the introduction of this kind of sport into Europe, Baron de Noirmont tells us that, although it was not unknown formerly to the Greeks and Romans, and the Crusaders brought back reports of what they had seen of it in Syria, yet it was not until the fourteenth century that trained leopards were actually seen in Europe. The Italians, he says, were the first to introduce them, having the best opportunities for procuring them, owing to their constant trade with the Mussulman princes of the East. When, in 1459, a French Ambassador, sent by the Duke of Burgundy to Pope Pius II., stopped on his way at Milan, and hunted with Francis Sforza, first Duke of Milan, he was astonished to see leopards carried on horseback (on a pillion behind their owners) and slipped at hares, which they coursed and killed.

Baron de Noirmont mentions other instances of the use of the Cheeta in Italy, and adds that both Charles VIII. and Louis XII. of France kept trained animals of this kind, with which they killed hares and roedeer. After a kill, the Cheeta, on being shown a little blood in a tin bowl, would leave its prey and jump on the horse's crupper behind its master. One would imagine that the horse would require almost as much training as the Cheeta to stand quiet in such circumstances.

Francis I., who ascended the throne of France in 1515, also had his hunting leopards which, according to Gesner (*Hist. Anim.*), were of two kinds. From his description the smaller kind must have been a Lynx. They must have been very docile, for, he says, the keeper scarcely mounted his horse before the beast jumped up after him, and seated itself on a cushion behind the saddle. Henry II., the successor of Francis I., in 1547 continued this kind of sport, and it appears to have been patronised at the French Court until the days of Henry IV., when the last trained leopards seen in France were those brought by Marie de Medicis from Florence in 1601. After that date, says Baron de Noirmont, they were no longer to be seen either in France or Italy, although in Germany the sport was revived by Leopold I., who died in 1705.

So far as I am aware, there is no record of the use of the hunting leopard in England. Even James I., great sportsman as he was, drew the line there. But an experiment (it can hardly be called anything more) was once made in this direction by the Duke of Cumberland, brother of George IV., with one of the two Cheetas of Tippoo Sahib, which, as above mentioned, were brought to Windsor in 1799. The Duke made a large inclosure in the park with strong netting 15 feet high, into which he turned a stag from Windsor Forest. The Cheeta was then brought in by two Indian attendants and unhooded. The stag showed fight, lowering his horns; and the Cheeta, disliking the

look of his opponent, bounded over the nets, and, dashing through the terrified crowd of spectators, pursued and killed a fallow deer at no great distance; and so ended, it is said, the first and last attempt at hunting with the Cheeta in this country.



HOOD FOR CHEETA

SHEEP-DOG TRIALS

A FEW years ago it was my good fortune to be present at the annual sheep-dog trials which are held at Llanberis, one of the loveliest spots in North Wales, and one which, from the beauty of its lake and mountain scenery, has been not inaptly termed the Chamouni of Wales. Imagine yourself in a mountain valley beyond the village. Behind you the old coach road, on the other side of which lies a sombre, placid lake, from whose shores on the far side abruptly rise the famous slate quarries of Dinorwic, towering high above the water. Down their steep sides incessantly come rolling avalanches of broken slate and rubbish, thrown out in truckloads by the men at work in the quarries. Falling at first with a crash, they come slipping, sliding, scattering down the hill, with a muffled roll like distant thunder, till they fall with a gigantic splash into the lake below, or partly rest in rugged disorder at the very edge of the water. Year by year in this way tons upon tons of solid matter come tumbling into the lake, whose circumference by this means becomes more and more narrowed, until, if the world last long enough, the day must come when the lake will be filled up, and hill and vale become merged in one vast rugged plateau.

The amphitheatre, of which this is the background, is a bright green meadow of a few acres, on Tynllan Farm, in which a crowd of a couple of hundred spectators stand in a great semi-circle, with their backs to the road above mentioned. In front of them, bounding the meadow, is a gravelly burn, shallow on the left, with stepping-stones in its bed, deeper to the right, and with a steep bank towards the spectators. Immediately on the other side we see the moorland, with its huge boulders lying scattered in all directions, between which lie patches of purple heather and clumps of fern, while here and there the brown and purple tones of the landscape are relieved by the green patches of mountain grass, on which the sheep love to pasture. High above all, and far beyond, towers the Snowdon range of rugged mountains, Snowdon itself being too far back and enveloped in cloud to be seen from the meadow where we are standing. Insensibly the moorland slopes upward until the boulders get grey and indistinct, and the purple hue of the heather is lost in the distance. Half-way up the mountain side a loose stone wall runs horizontally across the moor. Behind this, and out of sight of the spectators in the valley, is a pen of sheep, from which a shepherd, also concealed from view, lets out three sheep at a time through a gap in the wall, at a flag signal from the judge in the meadow. The part which each dog entered for the trial has to play is to leave the meadow at word of command, cross the burn, go up the hill, find the sheep, which very often, from the nature of the ground, he does not

see until he is close to them (being guided towards them by signal from his owner), bring them down the hill to the burn, force them to cross it into the meadow, and then pen them between three hurdles set in form of a triangle, open only to some eighteen inches at the apex. The distance the sheep have to be driven is, perhaps, half a mile, and the time allowed for the feat fifteen minutes. Any dog failing to pen his sheep within the specified time is disqualified, although an allowance is made if he pens one, or two, of the three.

No one who has not seen Welsh sheep go across country in front of a dog can form an idea of their activity and pace. It is something marvellous. On catching sight of the dog, who, it must be remembered, is a stranger to them, they bolt; sometimes together, sometimes in different directions. If a stone wall happens to run down the hill at right angles to that behind which the pen is formed (and of these there are several), over they go like cats, and perhaps take up hill again at top speed. The dog at once heads and turns them; they run down alongside the wall, but on the wrong side of it. They must be put at it, and sent over. Perhaps on re-jumping the wall they take a headlong course for the next hill, and, on being stopped by the dog, scatter in very broken and difficult ground on which to work. One of them, perhaps, will turn round a great boulder and be lost to sight. The dog then sticks to the other two, and, after a great deal of driving and turning, at length brings them to the edge of the burn. Here they refuse, dashing to

the right or left, sometimes even going in opposite directions. Again the dog recovers them, and, by short rapid turns, puts them once more at the brook. This time they seem almost to tumble in, and, wading through the shallow water, scramble up the opposite bank on the meadow side. Here

A SCOTCH COLLIE DOG.

they are ; the spectators are called upon to stand back as far as possible, while the sheep are brought towards the pen. Then comes the difficult climax ; to get the excited sheep (two or three, as the case may be) into so small a pen, through so small an opening, is indeed a clever feat. Although a couple of hundred are looking on, not a sound is uttered by anyone ; indeed, a single word from the judge

or the man who is working the dog would be distinctly heard, so still and silent is the delighted crowd. The sheep advance hesitatingly, approach the pen, almost touch it, but will not enter. At this juncture the shepherd is allowed to help his dog, and, while *he* stands on one side of the pen, the dog goes round them on the other, and, by wonderful management, gets them coaxingly up to the opening. The leading sheep hesitates for a moment, but, as both dog and master remain then quite still, it gains confidence, walks in, its companions (or companion, if one, as sometimes happens, has been lost) follow, and the shepherd then blocks the entrance. A ringing cheer goes up from the crowd, the judge makes his note of the performance, the sheep are removed to a pen in the rear, and another dog is called up for trial.

There were, perhaps, forty dogs on the ground, all led in collar and chain, under pain of being disqualified if found loose, except when called up for trial. For the "first-class stakes" there were thirteen entries, for the "second-class stakes" twenty, the owners hailing from places with such quaint-sounding names as Pen-y-clogwyn, Twlc Llanllyfni, Mynydd, Cilgwyn, Llwynbedw, Ysgubor, Tynyfawnog, and Tyn-y-nant. Many of the dogs were of the true "Scotch Collie" type, well-shaped, good-looking animals, both rough and smooth coated; but there were also several of a very different type—the old-fashioned "drover's dog," short-haired, short-tailed, currish-looking animals, some of them appearing to possess some terrier

strain in them. There was a great difference in the way the competitors did their work. Some dogs would take twice as much exercise as others in bringing their sheep down, and would hurry them too much over rough ground, thereby scattering them very often, and perhaps losing one or two,

AN OLD ENGLISH SHEEP-DOG.

or getting them to the pen in such an excited, overheated state, that they would bolt right and left of it rather than enter it. Other dogs, taking it more quietly after going fast up the hill, having found their sheep, would bring them down steadily and well together, giving them time at difficult places to pick their way amongst the boulders and loose

stones that lay scattered about, seldom barking, and altogether behaving in the most intelligent way. In this sort of dog was found the winner of the first-class stakes, Fan, the property of David Rowlands, of Talysarn. A small, light-made collie,[1] compared with many of the others, she proved herself as fast as most of them in going up for her sheep, and very superior in her style of bringing them down. Collecting them quietly, and starting them in the right direction, she did not over-drive them, and so long as they were going right, she stood still and watched them. It was only when they got too much to the right or left that she headed and turned them, allowing them then to proceed quietly as before, finally bringing them up to the pen so gently, and in such an unflurried condition that they could not but walk in quietly.

[1] The term "collie" affords an example of the curious changes which sometimes take place in the meaning of words. Originally applied to the Scottish black-faced and black-legged sheep, from the A.S. *col*, black, the shepherd's dog was naturally known as the "collie dog," and by wrongly abbreviating this to "collie," the name gradually got transferred from the sheep to the dog.

SWAN UPPING

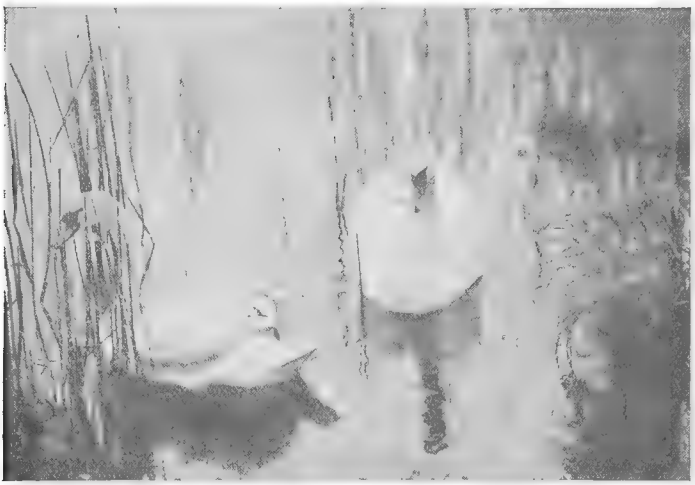
AMONGST the old customs which still survive in connection with city companies is the annual practice of "swan upping," or taking up the swans on the river Thames, at the end of July or beginning of August, for the purpose of marking them, so as to denote their ownership. The practice is a very ancient one, regulated by Acts of Parliament and Orders in Council, and was originally not confined to the Thames, but extended to all parts of England. I have numerous notes on this subject relating to swanneries and swan-marks in the counties of Lancaster, Norfolk, Suffolk, Lincoln, Cambridge, Huntingdon, Middlesex, Dorset, and Somerset, but for our present purpose need only refer to those which relate to the Thames.

The privilege of keeping swans—a royal bird—seems to have extended back as far, at least, as 1483, as appears by laws and orders made in that year and in the year 1496. In creating this privilege the Crown granted swan-marks (*cygninotæ*) to denote ownership, and the books or rolls of swan-marks that have come down to us are amongst the most curious relics of the past. Formerly no one might keep swans who was not possessed of freehold land of the yearly value of 5 marks, and under

a Statute of 22 Edw. IV., the swans or cygnets of any person not so qualified might be seized, and became forfeited to the king. Every owner of swans, however, had to pay 6s. 8d. for a license to keep them, although this license did not require renewing, for it was available for the life of the holder. That being settled, the next point was to denote the ownership of every bird by causing a mark to be made upon its bill, and this had to be arranged with the royal swanherd, or, as he was then called, the "Master of the Swans," who kept a book or roll for the purpose, in which the mark of every private owner was entered, and could be referred to at any time in case of dispute. From time to time commissions were issued for holding "Swanherds' Courts" or "Swan-mootes," at which Orders were made "where and when they were fit and necessary for the preservation of swans." These Orders were copied out and made known by proclamation in market towns. Two such copies are now before me; one, of Elizabeth's time, in MS., dated 1598, the other of Charles I.'s time, printed, and dated 1632. The later, a small quarto tract of considerable rarity, is entitled, "*The Orders, Lawes, and Ancient Customes of Swanns*, Caused to be printed by John Witherings, Esquire, Master and Governour of the Royal game of Swans and Signets throughout England. Published by August Mathewes, 1632."

The Orders of Elizabeth's day contain twenty-seven sections; those of Charles's time contain thirty-five, and they purport to provide for every

possible contingency that could arise in dispute regarding ownership and the proper protection of swans. The law relating to these birds, as appears by Statutes of Edward IV. and Henry VII., was very severe. Any person killing a swan, or even driving one away from his own ground if offering to breed there, was liable to a year's imprisonment,



THAMES SWANS.

and fine, at the king's pleasure, of 13s. 4d.; and anyone stealing the eggs incurred a penalty of 13s. 4d. for every egg taken. If a dog drove a sitting swan off her nest, his master forfeited 13s. 4d.; and if the dog killed the swan, his owner had to pay 40s., whether he was present or not. By way of still further protecting swans in the nesting time, no one was permitted to hunt ducks or other waterfowl

near the haunt of swans "with any dogges or spanylls from the feast of Easter to the Sunday next after Trinitie Sunday, uppon payne to forfeit 6s. 8d.;" while the setting of any snare, net, line, or other engine to take bitterns or swans was punishable with the like fine. Nor could anyone draw a net in the river between the beginning of May and Lammastide without incurring a penalty of 20s.

The origin of the names "Cob" and "Pen" for the male and female swan respectively is traceable to these ancient *Laws and Orders for Swans*, in which the sexes are invariably so designated. Thus, in 1598, we find it "ordeyned" that if any brood be found being led by one swan, the swan and cygnets "shall be seized for the king, till due proof be had whose they are, and whose was the swan that is away, be it *cob* or *pen*;" for, if the swan of one owner paired with that of another, there was a regulation as to the division of the brood in swan-upping time, when the cygnets were allotted and marked accordingly. The rule was thus worded in 1632: "In all common streames and private waters when cignets are taken up the owner of the *Cob* must chuse the first cignet, and the *Pen* the next, and so in order. But if there be three, then the owner of the grasse where they breed must have the third, for the spoyle of his grasse." At the present day in the case of a mixed brood the cygnets are divided between the two owners.

Although no "Swanherds' Courts" are now

held nor any proclamations made, and the office of "Master of the Swans throughout England" is abolished, many of the old orders are still adhered

THE SWAN'S NEST.

to for their own protection by those who keep swans upon the Thames. The owners thus privileged at the present day are His Majesty the King, the Vintners' Company, and the Dyers' Company, and the old custom of marking the birds

as soon as the young broods are sufficiently well grown is annually observed. Each has his own swanherd, and at the appointed time they meet at London Bridge and proceed up the river in boats by stages, the ceremony occupying four days. According to the old practice (1598) the "upping" was "ordeyned" to begin "upon the Monday next after Trinity Sunday," but it now takes place much later, usually commencing on the third Monday in July. The stages are from London Bridge to Ditton; Ditton to Staines; Staines to Bray; and Bray to Henley; the number of swans upon the river being so great (between 400 and 500) that it is not possible to catch and mark them all in less time than four days.

The alteration of date for the ceremony seems to have been made at least so long ago as James I.'s time, since there is an entry in the First Court Book of the Vintners' Company as follows: "10 July 1609. Swan-uppers for this yeare elected. The care of the birds confided to them. The Swanherd of the Company, with His Majesty's Swanherd, and the Swanherd of the Dyers' Company assemble at Lambeth, *in August*, and proceed up the river to mark the swans."

One of the earliest entries, however, in the records of this company, shows that the swans on occasion were "upped" in winter. Thus, under date 1509, we find the entry: "Payd, in the grete frost, to James, the under swanherd, for uppyng of the maister's swannes, iiijs." This "uppyng," however, in all probability was not for the purpose of mark-

ing them, for there would be no cygnets at that season, but with the object of penning them and feeding them at a time when, by reason of the frost, they would be unable to obtain their natural food. At the present day many of the Thames swans are taken up in winter, turned into barns and outhouses, and fed, the caretakers being rewarded by the swanherds for their pains.

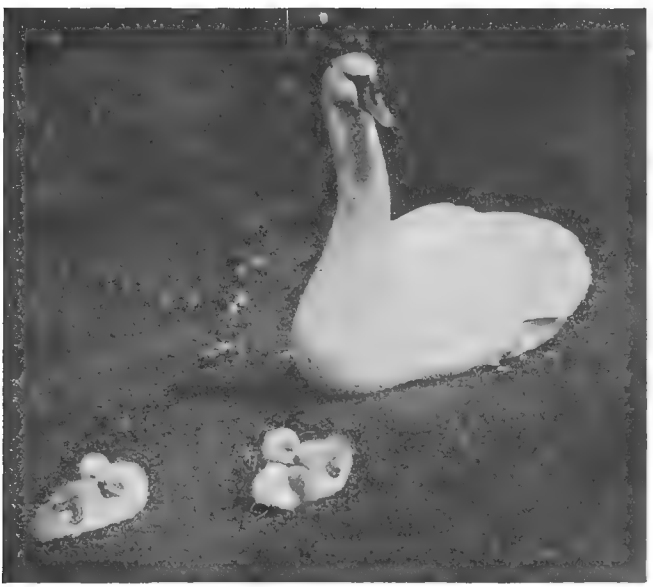
Why only two of the city companies should have been thus privileged to keep swans and mark them is now not easy to ascertain. The Dyers' Company received their charter from Edward IV. in 1473; that of the Vintners' Company, granted in the same reign, was renewed by Henry VI., and it has been suggested that, as the last-named monarch was fond of swans, it might have been good policy on his part to interest two powerful city guilds, both having their halls on the river side, where they still remain (Dyers' Hall Wharf and Vintry Wharf in Upper Thames Street), in the preservation of the birds by a grant of arms and swan marks. But this is more or less a matter of conjecture, for all the early records of the Dyers' Company were unfortunately destroyed in the Great Fire of 1666.

In the summer of 1895, having been invited by the Swan Warden of the Vintners' Company to assist at the ceremony of "swan-upping," I was not slow to avail myself of the privilege, and a more animated or picturesque scene could hardly be witnessed. The weather was propitious, the river at its best, the banks in the upper reaches being

clothed with a profusion of wild flowers of every hue. The yellow marigold and hawksbit, the toad-flax and lady's slipper (*Lotus corniculatus*), the blue speedwell, the purple loose-strife, the scabious, and the vetch, the white meadow-sweet, the comfrey, and the great ox-eye daisy, with many others, peeped forth from the banks, or showed in the meadows beyond as we journeyed up-stream, while overhead the swifts and the sand martins were our constant companions. The procession, too, was a gay one. There were six boats in all, each swanherd having two under his control, the Queen's men in scarlet, the Dyers' in blue, and the Vintners' in blue and white, while the boats were still further distinguished by the fluttering pennons, on which were borne the insignia of the Queen and the two civic companies. Rowing leisurely in single file until swans were sighted, the order was then given to close in round the birds in a semi-circle. The swanherd's crook was then brought into requisition, and as each swan in turn was brought alongside and seized, it was lifted bodily into a boat, its legs tied together over its back, and for a short time lay helpless, until put ashore with the rest of its companions in order to be marked. After every catch, the swanherds landed to examine the birds and mark them according as they were found to belong to the Queen, or the Vintners', or the Dyers' Company.

A good deal of nonsense has been written on the supposed cruelty of marking swans, and some years ago (in January 1878) the Society for the Prevention of Cruelty to Animals was so ill advised as to

prosecute the swanherds of all three owners with a view to abolish the practice. The writer was invited to attend as a witness on behalf of the prosecution, but declined, on the ground that a time-honoured custom, which had been regulated by Statutes and Orders in Council, was not likely to



NEWLY HATCHED CYGNETS.

be set aside by a magistrate's order made at petty sessions. This view proved to be correct, the summonses were dismissed, and nothing further has since been heard of the matter.

As an eye-witness of the mode of marking the old swans and pinioning the cygnets, I am prepared to affirm that the swanherds not only handle the

birds as gently as possible in catching them and tying their legs, but in nicking the bills. The incisions made on the upper mandible are comparatively so superficial that the slight hemorrhage which follows is soon checked when the bird, on being liberated, plunges its beak under water.

The swan marks now in use are simpler than they used to be, as will be seen by the accompanying illustrations.

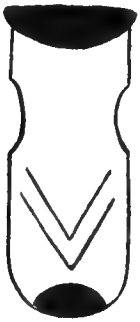
As to the number of swans at present maintained on the Thames, the following statistics will be of interest. In 1887 there were 392 ; in 1888, the number was 343. In 1893 the Queen had 142 old swans and 60 young ; the Vintners' Company, 91 old and 48 young : the Dyers', 68 old and 36 young : in all 445. In 1894, only five more were counted, their increase being counteracted by casualties, swamped nests, addled eggs, accidents to cygnets, deaths in winter, and the annual annexation of about thirty birds which are taken up to be fattened for the royal larder at Windsor.

Although four days are spent annually in catching them, it is not always possible to follow them up the back waters and side streams, along many of which a boat cannot pass. Those birds, however, that temporarily escape, get subsequently hooked by the swanherds, and marked when they come out into the river again.

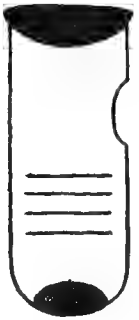
As the boats in procession pass in front of the Castle at Windsor, a pretty custom is observed which ought not to pass unnoticed. The boats of

the Vintners' and Dyers' Companies draw up on either side of the river in single file, the crews standing up with oars erect, while the royal

THAMES SWAN MARKS.

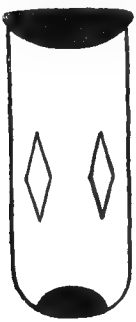


OLD MARK OF THE VINTNERS' CO.



OLD MARK OF THE DYERS' CO.

SWAN MARKS IN PRESENT USE.



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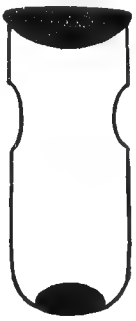
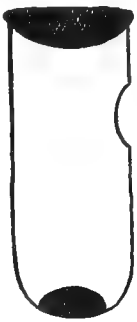


THE VINTNERS' CO.



THE DYERS' CO.

boats row slowly in single file between them, during which time three ringing cheers are given for His Most Gracious Majesty. The animation of the whole scene, the bright colours of the crews, each with a swan's feather in his cap, the dazzling white-

ness of the swans, the drenching spray cast up by powerful pinions in the frantic but unavailing effort to "run the blockade," and the gaping crowd of amused bystanders on the banks, form a *tout ensemble*, the picturesqueness of which may be more readily imagined than described.

At the time of penning these remarks, although the annual ceremony was long over (having taken place in July), the official returns of the number of swans caught and marked had not been rendered by the swanherds, so that a comparison of the statistics for 1895 with those of 1894 had consequently to be deferred. Even on the last day of October the swanherd of the Vintners' Company, Mr W. T. Abnett, whose son had succeeded to the office of Royal Swanherd, wrote that he had only just finished marking, and that there were still two broods of unmarked birds on the river—one at Temple, the other at Hambledon, near Henley—which eluded capture by working up the ditches and back-waters, where it is difficult to get at them.

Omitting these two broods of five birds each from his calculations, he reports that the number of swans on the river in 1895, old and young, was ascertained to be 411, of which 145 belonged to the Queen, 161 to the Vintners' Company, and 105 to the Dyers' Company.

As compared with the returns for 1893 and 1894, the total number is somewhat below the average. This will be made clear by the following tables, which show approximately the distribution of the swans on the river at different stages

(although this is liable, of course, to variation), and the proportion of old to young birds :—

Swan Upping, 1893.		Queen's.		Vintners'.		Dyers'.		Totals.
		Old.	Young.	Old.	Young.	Old.	Young.	
First day .	London to Ditton.	9	0	7	1	2	0	19
Second day	Ditton to Staines .	12	4	24	18	20	17	95
Third day .	Staines to Bray	25	10	32	17	21	9	114
Fourth day	Bray to Henley	73	26	22	8	25	10	152
	Marked since	35	20	6	4	0	0	65
	Totals .	142	60	91	48	68	36	445

Here it will be seen that in the lower reaches of the river there were comparatively few swans, that their numbers increased in proportion as they escaped from the traffic of boats and warehouses, and that they were most numerous between Bray and Henley.

Swan Upping, 1894.		Queen's.		Vintners'.		Dyers'.		Totals.
		Old.	Young.	Old.	Young.	Old.	Young.	
First day .	London to Ditton.	14	7	9	5	2	0	37
Second day	Ditton to Staines .	13	10	34	29	25	19	130
Third day .	Staines to Bray	25	5	36	18	23	4	111
Fourth day	Bray to Henley	47	17	12	6	19	11	112
	Marked since	33	21	5	6	0	0	65
	Totals	132	60	96	64	69	34	455

In 1894 there was a slight increase in the total number of birds on the river, and while the Vintners' Company gained twenty-one, the Dyers' Company lost one, and the Royal swans were reduced by ten.

Swan Upping, 1895.		Queen's.		Vintners'.		Dyers'.		Totals.
		Old.	Young.	Old.	Young.	Old.	Young.	
First day .	London to Ditton .	16	5	17	6	5	0	49
Second day	Ditton to Staines .	14	5	35	11	24	8	97
Third day .	Staines to Bray .	21	10	45	27	26	11	140
Fourth day	Bray to Henley .	38	16	15	2	15	10	96
	Marked since .	6	14	3	0	2	4	29
	Totals . .	95	50	115	46	72	33	411

In 1895 the returns show a total reduction of forty-four birds, or twenty-six below the average for the past three years. Taking the figures for this period, it would appear from the foregoing tables that the average number of swans maintained on the river, old and young, is 437, of which 179 belong to the Crown, 153 to the Vintners' Company, and 104 to the Dyers' Company. In other words the Vintners' Company owns about fifty more swans than the Dyers' Company, while the Crown has twenty-five more than the Vintners'.

The swanherds reported that as a rule the swans in the Thames are well treated by the public, who feed them frequently, and do not molest the young nor take the eggs. This, of course, has an im-

portant bearing in maintaining their numbers. Casualties unavoidably occur, such as the swamping of nests, and the consequent addling of eggs; the destruction of newly-hatched young by pike or by accident; deaths from cold or starvation in winter, although at that season many of the birds get housed and fed; and so forth. It is pleasant to know that the Thames-loving portion of the public show consideration for the swans from choice, and not from compulsion, although the swanherds would not be slow to invoke the aid of the law were it necessary to prevent the destruction of birds or eggs.

As to the legal status of the birds themselves, the principle seems to be that when a swan is reduced lawfully into the possession of a private person, whether it be marked or not, he may be said to have a property in it for the purpose of an indictment at common law for larceny or otherwise; but that, if the bird be at liberty in the sea, or in a navigable river, *prima facie* it belongs to the Crown.

Although it is not larceny to take the eggs of swans, since the law has assigned a less punishment for the offence by Statute, the eggs are protected under sec. 24 of the Game Act, 1 & 2 Will. IV. cap. 32, which enacts that, "If any person not having the right of killing the game upon any land—nor having permission from the person having such right—shall wilfully take out of the nest, or destroy in the nest upon such land the eggs of any bird or game, or of any *swan*, wild duck, teal, or wigeon,

he shall, on conviction thereof before two justices of the peace, forfeit and pay for every egg so taken or destroyed, such sum of money not exceeding 5s. as to the justices shall seem meet, together with the costs of the conviction."

In 1859, at the Spring Assizes at Reading, a case of stealing a Swan was tried before Baron Channell, when the defendant, one Lovejoy, was charged with stealing a Swan belonging to the Dyers' Company. The learned judge held, on the authority of Lord Hale (*Pleas of the Crown*, vol. i., p. 511), that a Swan, though at large, and a bird *feræ naturæ*, was under the circumstances the subject of larceny, being marked. The defendant was accordingly convicted.

BIRD LIFE ON THE BROADS

To the naturalist who is intent on observing and not slaying such unfamiliar birds as he may meet with in the course of his rambles, there are few more attractive places in England than the Norfolk Broads. And this for several reasons. They lie out of the beaten track, and to be seen must be made the object of a special expedition ; the scenery is very unlike what most people are accustomed to, reminding one more of Holland than of England, while the class of birds one meets with at every turn are more or less of a kind unfamiliar to the majority of wayfarers. This, of course, might be expected from the general aspect of the country, which is *sui generis*, and characterised by its extreme flatness, the superabundance of water, the absence of trees, and the luxuriant growth of sedge, bullrush, and yellow iris. Deep, sedgy "ronds," or dense masses of reeds and rushes shut out at times the adjacent marshes. On the one hand, to quote Mr Stevenson, a wide expanse of swampy ground, relieved here and there with belts of alder and birch, or dwarf coverts suggestive of pheasants and woodcocks in autumn, blends broad with broad ; on the other, some slight recess in the waving reed screen is covered in summer with a

profusion of water-lilies, or an alder carr, fringing the water's edge, casts a grateful shade in strange contrast to the surrounding glare. Everywhere the rich aquatic herbage teems with bird life.

To enjoy these unwonted surroundings to the full there is no better plan than to hire a punt, and, under the skilful guidance of a marsh man, explore the reedy labyrinths that lead gradually from the margin of the broad to the open water. Indeed, this is the only mode of ensuring a glimpse of birds at close quarters, for were one to adopt the alternative of trying to walk round the broad, such denizens as Coots, Moor-hens, and Grebes would only be seen swimming at a distance, while the smaller species, such as the Reed and Sedge Warblers, the Bearded Tit and the Black-headed Bunting, would quickly be lost to sight amongst the dense shelter of reeds and rushes. The use of a punt, moreover, has this advantage: it enables the visitor to approach the waterfowl silently, and, to a great extent, screened from their observation; for the punt is so low, the reed beds so high, and the waterways so tortuous, that one may engage all day in a series of stalks by water so effectively as to bring one literally face to face with some of the shyest creatures, that would not otherwise suffer themselves to be so nearly approached.

So admirably adapted are most birds for the particular kind of country in which they can best get their living that, upon a rough classification into groups representing the woodland, moorland, downland, fenland, and coastland, it would be com-

paratively easy to predict the species most likely to be met with in any one of these situations. So in Broadland anyone with a good knowledge of birds may make a pretty shrewd guess beforehand what kinds he will have a chance of observing, and, what is more, will probably succeed in finding most of them. There are, of course, many ubiquitous species so generally given to wander, and to make themselves at home under almost any conditions that we do not expect them to observe strictly the boundaries above indicated. Hence we need not be surprised to see about the broads several common birds of wide distribution which may be observed any day without going so far afield. What we look for, naturally, are the characteristic marsh birds, the waders, the swimmers, and the aquatic warblers, though something, of course, will depend upon the time of year at which our visit is made, for the warblers are only to be found there in summer, at which season bird life seems always more abundant, by reason of its being the nesting time.

As we approach the broad to step into our punt, one of the first birds to come into view is a Peewit, which rises near the edge of the water and flies out over the marsh, its conspicuous black and white plumage showing up well in the course of its characteristic evolutions. Almost at the same time the wild, tuneful note of the Redshank is heard, as first one and then another of these birds rises from the marsh and follows in the direction of the retreating Peewit. A very different looking bird is the Redshank on the wing. Viewed from behind with

outstretched pinions, the plumage looks grey, with a white band across the wings, and a white patch just above the tail. The long orange-coloured legs hang out behind as the bird rises, but are soon concealed outstretched beneath the tail. If the nest be near, the parent birds will hang about with

THE REED WARBLER.

short beats of wing, betraying their anxiety by their cries and their reluctance to leave the spot. At any other time they would fly right away, their wild, musical notes being heard long after they are out of sight.

And now, seated in the punt, field-glasses in hand, we glide softly away from the bank, and enter a channel which winds amongst the tall reeds,

slowly and noiselessly propelled by the long pole or "quant" of the marsh man. We catch a hasty glimpse of a Reed Bunting, a fine cock bird, with black head and a white collar.[1] As he disappears amongst the reeds he flirts an ample tail, in which the outer feathers show white, an unmistakable little bird at all times. Hardly has he disappeared

THE SEDGE WARBLER.

before we hear the characteristic hurrying notes of the Sedge Warbler, "chitty, chitty, chitty, cha, cha," and catch sight of the bird as it quickly shifts its position on a slanting reed stem. We easily know it from the Reed Warbler by its mottled appearance about the head and wings, the same parts in the other bird being of a uniform pale

[1] Its portrait appears on page 15.

brown. The "Sedge-bird" nests close to the ground, the "Reed-wren" suspends its nest amongst the reeds, two or three of which pass through the nest and help to support it, while its deep, cup-shaped form serves admirably to prevent the eggs from rolling out when swayed by the wind.

It is, perhaps, too much to expect amongst the little denizens of these vast reed beds a peep at some rare species, such as the Bearded Tit or the Marsh Warbler, so like a Reed-wren as to be with difficulty distinguished from it, or the Aquatic Warbler, of which only a very few examples have been procured in this country, but which may be detected at a glance by the three white streaks on the head, one over each eye, the third down the centre of the forehead. Further away in the marsh we should hear the unmistakable trill of the Grasshopper Warbler, though a sight of it can only be obtained by patient watching. It loves drier situations than any of the birds above mentioned, and we have never seen or heard it amongst the reeds. Along the margin of the water, where the grass is short, the Yellow Wagtail picks its way daintily, yet rapidly, now and again darting into the air to catch a passing insect. A cock bird of this species in summer time is as yellow as a canary, and does not fail to strike with admiration the observer who notices it for the first time.[1]

In a similar situation, that is, on the margin of the water, a somewhat larger bird may be seen

[1] Its portrait is given on page 17.

running, its mud-coloured back harmonising so well with the natural surroundings that when at rest it is almost invisible, unless the eye has first detected it while in motion. This is the Common Sandpiper or Summer Snipe, as it is often called. On taking flight it skims out over the water with quick pulsations of the wing, returning in a semi-

THE BEARDED TIT.

circle to the shore some distance away as it utters a sharp note and oft-repeated "weet, weet, weet." From the side of a marsh drain we may often see a larger and darker Sandpiper spring up with a louder whistle, "tui, tui, tui," and take the air like a Snipe, flying not unlike one, but looking somewhat smaller, blacker, and with a white rump, which may be seen at a considerable distance, as in the case of

the House Martin, as the bird flies away with its back towards you. This is the Green Sandpiper (*Totanus ochropus*), which may be looked for annually in spring and autumn, in such situations as are commonly affected by its smaller relative above named. Unlike other Sandpipers which nest on the ground, this bird has a singular habit of laying its eggs in the deserted nest of a Thrush, Magpie, or Pigeon, sometimes at a considerable elevation, and on this account no doubt they have often escaped observation. From the fact of the Green Sandpiper having been met with in pairs during the summer months, in situations eminently suited to its habits, it is not unlikely that it has occasionally reared its young in this country, but although there is much circumstantial evidence in that direction, the fact of its having bred in any part of the British Islands has never been satisfactorily established.

But now, the punt having emerged from the reeds into the open, we see a great expanse of water, and in the distance a lot of birds, swimming so low as to make it difficult to distinguish the species. But as we draw nearer to them all doubts are resolved. Some Ducks and Teal take wing and go off in separate parties, the latter in close order and flying with great rapidity, the former more scattered and with higher and heavier flight. There still remain behind upon the surface, and quickly making for the nearest reed bed, a number of birds that look black in the distance, but have a conspicuously white forehead. These

are Coots, which at first endeavour to escape by swimming, but eventually open their wings and scuttle over the surface of the water, and soon disappear amongst the reeds, a few only making their escape by diving. Water-hens, of course, are amongst the commonest of waterfowl in such congenial haunts, and the Water-rail and Spotted Crake

THE COOT.

are also, doubtless, there, but from their skulking habits and unwillingness to take flight, they are seldom seen except by snipe shooters, and then, usually, when hard pressed by a dog. Snipe breed commonly in the adjoining marshes, once the haunt of the Black-tailed Godwit, and the Ruff and Reeve; but the two last named have long since ceased to gladden the eyes of the wandering naturalist, and

now only make their appearance in much reduced numbers during the period of their migrations in spring and autumn.

The largest fowl of all that habitually frequent the Broads has yet to be mentioned, namely, the Heron. The still solitude of the place attracts him, and he quits the marsh dykes, with their frogs and water-rats, for a change to the reed-sheltered broad, where he shares a fish diet with the Otter, the Grebe, and the Kingfisher, all expert fishers in their way. Time was when the Cormorant also made one of them, for eighty years ago these birds nested in Norfolk, as did also the Avocet (1825) and, still longer ago, the Spoonbill (1671) and the Crane (1542). But these birds are no longer to be classed amongst the summer residents of the marshes, any more than the Bittern, the Godwit, the Ruff and Reeve, or the Black Tern. These are now seldom seen, except at the period of their migrations in spring, when a few stragglers appear in the neighbourhood of their ancient haunts, as if seeking for a quiet nesting-place; or again in autumn, when on their way south from distant breeding grounds less disturbed. At these same seasons the broads are visited by numbers of Black-headed Gulls[1] and several kinds of Terns, or "Sea Swallows," namely, the Common, the Lesser, and the Black Tern, the last named the only one that ever nested in the marshes, the two others invariably resorting during the breeding season to the shingle beaches by the sea.

[1] The Black-headed Gull is figured on page 22.

Amongst the wildfowl to be seen on the Broads in summer may be noted, besides the common Wild Duck and Teal, the Shoveler, the Gadwall, and the Garganey, while later in the year, when the "foreign" ducks come in, flocks of Wigeon and Pochard arrive, and smaller parties of Tufted

THE GREAT CRESTED GREBE.

Ducks. The reader who would know more of the avifauna of the Broads may be referred to the admirable pages of Stevenson's *Birds of Norfolk*, and to Lubbock's *Fauna of Norfolk*, edited by Southwell, as well as to the more recently-published volume on *The Norfolk Broads*, edited by W. Dutt, in which will be found an interesting chapter on the birds by the Rev. M. C.

Bird, as well as a detailed list of them which is given in an appendix. In addition to these sources of information, many valuable articles by Messrs Gurney, Southwell, Feilden, Norgate, Upcher, and other Norfolk naturalists, may be found in the *Transactions of the Norfolk and Norwich Naturalists' Society*, which, founded some thirty odd years ago, still remains a model compendium of local records.

SOME SEVENTEENTH-CENTURY DECOYS

For some years past the authoritative work on wildfowl decoys has been, and, indeed, still is, that by Sir R. Payne Gallwey, which is so comprehensive in its details as to leave little room for any additions of importance. There are, however, sources of information which escaped his notice, and which are of sufficient interest to deserve mention. The following extracts will have an attraction not only for owners of existing decoys, but also for naturalists with antiquarian tastes, who may glean from them some interesting particulars concerning the now obliterated traces of the former haunts of English wildfowl, and of the various species which used to be captured in decoys that have long since disappeared.

Sir William Brereton, the Parliamentary general, who was created a baronet in 1627, and died in 1661, lived at Handford, between Wilmslow and Cheadle, in East Cheshire, and owned a decoy with five pipes, near Dodleston. The present appearance of the site is described by Messrs Coward and Oldham in their *Birds of Cheshire* (1900, page 162), and it is noteworthy that a farm on the road between Dodleston and Chester is still known as the Decoy Farm. In the working of this

decoy the General took much personal interest, and lost no opportunity of visiting and inspecting others, not only in England and Ireland, but also in Holland, and making observations upon them in his journal. Fortunately, as pointed out to me by Professor Newton, his notes have been preserved. In a MS. account of his Travels in Holland, the United Provinces, England, Scotland, and Ireland, in possession of Sir Philip Grey Egerton, Bart., of Oulton Park, Cheshire, and printed in 1844 for the Chetham Society, frequent mention is made of the wildfowl decoys which he saw in Holland, in 1634, and some curious details are given respecting them. The following entries are worth quoting. On the way to Holland, he says :—

"We lodged at the Ship at Quindburrow (Queenborough), and were well used ; six lobsters bought for 1s., one quick (*i.e.*, alive). A convenient place in the remotest part of the marsh for a 'coy" (p. 3).

Arrived in Holland, on reaching Dort, he wrote :—

"The island whereon this fair maiden city stands is encompassed round by the Maas and Waal, two great navigable rivers. This island is about six or eight English miles about, and preserved by a strong bank about 12 yards high, beyond which bank are seated many (some dozen or twenty) 'coys. We were in three 'coys, all well wooded ; two of them adjoining close together, the one a lesser 'coy (which is the winter 'coy), hath fine pipes *like unto mine.* It is ten English roods

long on the sides, eight roods broad ; no wildfowl therein, but we were permitted to walk within the hut. The 'coy ducks came boldly unto us and fed, belonging hereunto 150 ducks, 13 drakes ; dainty, fair, spacious, and well-proportioned pipes, higher overhead, longer and better compassed than I ever saw in England. Twiggen nests provided for the ducks to breed in.

"The other 'coy joining hereunto much more spacious and larger ; it hath six pipes in one end only, thirty-five roods long and thirty broad. We were not permitted to see this larger 'coy. Ducks sold for 6d. apiece ; two pellstarts (pintails), two smeaths" (wigeon),[1] two shovelars,each equivalent to a duck, and four teals 6d.

"Another 'coy we saw, wherein are four pipes in one end ; a great pool. The ducks fed with barley. The dog farm, three roods from the hut or the pipes, and by the help of a little ladder the dog is enabled to leap into the hole a yard high. The fowl in the little 'coy fed with barley. But we could not be admitted to take a full view of any of these 'coys, neither are there any spy holes into the pond ; but all their pipes are much more curious, and carry a far better proportion than ours" (p. 17).

On reaching Delft, Sir William Brereton wrote :—

"In this town tame storks and shovelars (spoonbills) kept tame ; birds with long legs, less bodies than our storks, and broader bills like our

[1] Known as "smee" in Norfolk. Newton, *Dict. Birds*, p. 5, *v.* Smew.

shovelars. After dinner went to see Gabriel Direkson's 'coy, a rich boor in the country, who dwells beyond Shippley (a few miles south-west of Delft). He is 'coyman himself. His 'coy is seated near his own and some other houses, and the highways and navigable rivers on both sides, nearer by much than Dodleston Bridge or Findloes House is to my 'coy (*i.e.*, two miles from Dodleston Bridge). His 'coy hath five pipes *as mine*, but better compassed, and two of them almost meet. Much wood, reed grass, and thicket, within" [which is] "the hut, so as the fowl on one end cannot discern the dog showing elsewhere. Abundance of quince trees herein planted, which prosper very well.

"He hath about 200 ducks, 20 drakes. He hath fowl bred betwixt pellstarts (pintails) and ducks, about twenty.[1] I saw some of them. Many grey ducks (gadwalls), which are best. 'Coy dogs are best that are either white or red, and the more hairy the better. These ducks are as tame and familiar about his house as any tame ones can be.

"Smeathes (wigeon) he keeps in a hut near his house, covered with a net" (p. 23).

On June 5, Sir William Brereton reached the Hague, where he wrote :—

"In the morning I went to see some 'coys, whereof here are abundance. Six in my view, two whereof I saw, the former rented for 250 gilders, the other for 225 gilders a year. Six here are within half a Dutch mile. They had both three

[1] Perhaps the earliest case on record of a cross between pintail and mallard.

pipes in one end, and one in the other; 200 flying smeathes (wigeon), belonging to one 'coy; abundance of pellstarts (pintail), and thirty pellstarts in one hutch.

"These 'coys near the highways; mighty high trees grow in both of them, so full of cover within the hutch and without, as all ground, reed seatings, and all, covered with wood. Here a 'coy duck brings up chickens. Wood covereth some pipes so thick as there is no net. Sometimes, take 200 in a day; sell them at Christmas for 1s. a duck; at other times sometimes 6d., 7d., 8d., and 9d. as in season. Trees, herein, as high as birches; their ducks, smeathes, and pellstarts exceeding tame."

On Saturday, June 7, 1634, Sir William Brereton went from Leyden, as he tells us, "to John's father's, in a waggon by him sent." John was a Dutchman employed to manage his decoy in Cheshire, and had accompanied him to Holland to visit his relations, and see some of the Dutch decoys in company with his master.

"We went about six o'clock (a.m.) and came to Allifein, about half-past nine, which is nine English miles. . . . Before ten hours we came to John's father, and went with him to his 'coy, wherein wood excellently grown; apple trees, plum trees, and cherry trees prosper very well, and shed forth abundance of wood. The largest and neatest 'coy house I have seen, lofted overhead to lay corn or hemp seed; the pipes so straight, bending some little towards you. Four pipes only until last winter, two in either end; one more added last

winter of no use. Here, by the help of a windmill, they can drown all the ground round about the 'coy. On my return I went in to see (at Allifein) the house of the Lord Offerbecke. On the back side I saw a pool empaled, wherein were pellstarts, smeathes, shovelars, teals, and others, and a straight poor pipe to take fowl in."

On his way north, to Scotland, in 1635, Sir William Brereton visited two decoys which have escaped notice in Sir R. Payne Gallwey's book. In June of that year he was at Newcastle, where he "lodged at The Swan, at Mr Swan's, the postmaster, and paid 8d. ordinary, and no great provision." Mr Swan, he remarked, was "a very forward man to have a 'coy here erected." Halfway between Newcastle and Morpeth, that is, about seven miles from the former town, he "took notice of a convenient seat of a 'coy in Point Island, which belongs to Mr Mark Errington." All traces of this decoy have long since disappeared, and no allusion is made to it under the head of "Wild Duck," in Hancock's *Birds of Northumberland*, 1874. There is no evidence of the existence at any time of a decoy in Scotland, though some years ago the formation of one near the Bay of Findhorn was contemplated, and, indeed, commenced, by Major R. Chadwick, but was never completed. Sir William Brereton makes no mention of any seen by him when travelling in Scotland in 1635. But when in July of that year he proceeded to Ireland, he found a decoy in Wexford, which he describes as follows. As no

mention of this decoy is made by Sir R. Payne Gallwey in his book on decoys, nor by Mr Ussher, in his *Birds of Ireland*, it is deserving of notice.

"About a mile hence lies a farm called 'The Park,' which is now leased unto one Mr Hardye, an Englishman, who lives upon it, and hath an estate in it about thirteen years. This land is almost an island, and the rent which Mr Hardye pays is about £16 per annum. . . . Here is the best feeding for fowl that I ever saw. This grass, which comes from the mud, is good food for them, and there is good store of it; and here is a little grove of oaks, wherein is no good timber, but it so stands as it is most strong shelter to the fowl that feed or frequent under it. Here is the most commodious and convenient seat for a 'coy that ever I saw, but there is no more room whereupon to erect a 'coy betwixt the water and an high bank of the wood, than four or five roods in breadth, but sufficient in length; so as you must either make so much of the mud firm land whereupon to build your coy, or else you must only make good one side with two pipes, or you must erect your work upon a point of land, which lieth much eastward, and is in view of the town (Wexford), and much more inconvenient, or you must carry away abundance of earth to make a pond and pipes in some ground as yet much too high to the N.W. end of the wood. Here grow ollers (alders) sufficient to plant a 'coy, and here is sufficient wood to cleave into stakes for all uses, and as I am informed reed may be provided out of Sir Thomas Esmond's land, which is on the

other side of the water ; and all necessaries may be supplied by water from the Slane, Mr Hardye demands for his interest, which is for thirteen years, £55, and will abate nothing."

From this and what follows it would appear that Sir William Brereton was so pleased with the capabilities of the place for working a decoy, that he negotiated for a lease, and the purchase of Mr Hardye's interest; but the landlord asked a premium of £100 for an eighty years' lease, which Sir Willian Brereton thought unreasonable, and the negotiation fell through.

On his return from Ireland, *via* Bristol, he journeyed from Bridgwater to Woolavington, thence to Marke, and to Stoke Rodney, near which last-named place he visited a decoy which is briefly mentioned by Sir R. Payne Gallwey, who is mistaken, however, in supposing that it was probably not constructed until after 1802, in which year an Act was passed for the drainage of the adjoining marshes. Sir Willian Brereton saw it in 1635, and thus describes it :—

"About half a mile hence (*i.e.*, from Stoke) is Orion's 'coy, which is placed very near a highway. This is a large spacious 'coy pool, and wood prospereth exceeding well. By reason of the drought there was a great want of water, until it was replenished and supplied with some late found out springs" (p. 171).

This answers Sir R. Payne Gallwey's surmise that until the drainage of the marshes after 1802, the superabundance of water rendered the working of a

decoy impracticable. He does not mention the number of pipes, but Sir William Brereton tells us that there were five, as in his own decoy. He adds:—

"The seatings within the 'coy are overgrown with wood; abundance here is of tame fowl, drake pellstarts, and smeathes (pintail and wigeon) I saw, but no ducks. The 'coy house is larger than mine, both higher and longer. . . . The owner advised me, if it were possible, to bring a spring into my 'coy: by the means hereof they took good store of fowl last storm. I observed most part of the ground betwixt the pipes planted with withens (willows), except one orchard of cherry trees. Here were three dogs of different colours, none so little, nor seeming so nimble, as my 'coy dogs. Here much oats is used, as in my 'coy. Very few ducks bred here this summer came to good."

In these few extracts from the little-known journal of a famous General, we have a substantial addition to the history of decoys in this country, and while on this subject, it may be well to remark that, since Sir R. Payne Gallwey published his authoritative work, another important discovery has been made by Mr Southwell, who, in the sixth volume of the *Transactions of the Norfolk Naturalists Society* (1897, pp. 352-359), has published an interesting account of an old decoy at Feltwell, in Norfolk, concerning which no information was available when Sir R. Payne Gallwey was collecting material for the volume in question. In any new issue of the work, these important additions should not be overlooked.

THE OLDEST BOOK ON FISHING

WHATEVER branch of field sports may be to a man's liking, its early history, if he be also of a literary turn, should be a curious subject for inquiry. It is always interesting to ascertain the origin of any method which experience has shown to be successful, and to discover, if possible, the earliest writer who thought he knew enough of his subject to attempt to instruct others. For the earliest treatise on hunting in England we have to go back to the time of Edward II., to a little tract in Norman French, composed, about 1320, by the King's huntsman, Guillaume Twici, for the purpose (as he tells us) of teaching others what he himself had learnt in his time. The art of falconry found exponents long before that date. The troubadour Deudes de Prades, in a French poem composed about the end of the twelfth century, refers to a treatise on hawking by Henry I., surnamed Beauclerc (A.D. 1100-1135). And in another poem on the same subject in Norman French, which, according to Sir Henry Ellis, was written in the Abbey of Reading about the year 1240, the author states that he took his matter from a book made for or by the good King Edward—that is, Edward the

Confessor. Earlier still, namely, in the tenth century, Archbishop Ælfric's *Colloquy*, designed to teach the Anglo-Saxon scholars Latin, includes a dialogue between a scholar and a falconer, which gives some curious details of hawking as practised in Anglo-Saxon times. Thus, in regard to hunting and hawking, the literature of both subjects commenced much earlier than that of fishing, and on all three subjects treatises had been written long before the *Book of St Albans* was printed. The earliest printed book in any language on hawking, *Das Erste Buch*, appeared at Augsburg in black letter about 1472.

The question remains, what is the earliest known book on angling? Most people will be under the impression that the answer must be the *Book of St Albans*, but it is important to note that the treatise on fishing formed no part of *the first edition*, and therefore Dame Juliana Berners could have had no hand in it, either as author or compiler.

What are the facts? In 1486 the *Boke* was first printed at St Albans by one whose name has not come down to us, but who is described as "sometime schoolmaster at St Albans." It is evidently a school book, designed for the instruction of youth in the accomplishments of the period, in which, as he tells us, "gentylmen and honeste persones have grete delyte." The lessons it contains, and the language in which they are conveyed, adapted to the intelligence of youth, show that they were intended to be taught by a school-dame, in all probability by the wife of the

schoolmaster who printed the book for her.[1] Thus we read :—

> "Wheresoevere ye fare by frith or by fell,
> *My dere chylde* take hede how Tristram doth you tell
> How many maner beestys of venery ther are.
> *Lysten to your dame*, and she shall you lere."

The doggerel rhymes, no doubt, were intended as an aid to memory. This first edition, then, contained three treatises—the first on hawking, the second on hunting, the third on the blazing of arms. None of them was original, but all were compiled from older manuscripts, which have been identified. From the colophon to the third treatise it is clear that it was not original, but was "translatyd and compylyt togedyr at Seynt Albans." It was, in fact, translated from the Latin MS. of Nicolas Upton, *De Studio Militari*. The *Treatyse of Fysshynge with an Angle* formed no part of the *Boke of St Albans*, and was not printed until ten years later (1496) by Wynkyn de Worde, Caxton's assistant and successor at the Westminster press. With this, naturally, Dame Juliana Berners had nothing whatever to do, and the mistake in attributing it to her probably arose from finding it included by Haslewood in the first important reprint of the book in black letter in 1810, and supposing from the title that it was a reprint of the first edition. Haslewood, however, took the second edition as being more complete with the treatise

[1] Haslewood alludes to him as "the monkish schoolmaster," in which case, of course, there could have been no marriage. But there is no evidence of any kind to warrant the assumption that he was a monk.

on fishing, and he is careful to state in his commentary on this part of the volume (*Introduction*, p. 60) that "neither for Juliana Barnes, the monkish schoolmaster, nor anyone who assisted in compiling the original *Book of St Albans*, can there be consistently advanced a claim of authorship in this 'little pamphlet.'" The last two words have reference to Wynkyn de Worde's own explanation of the reasons which prompted him to add it for the first time to the treatises previously printed. He says :—

"And for by cause (*i.e.*, in order) that this present treatyse sholde not come to the hondys of eche ydle persone whyche wolde desire it yf it were enpryntyd allone by itself *and put in a lytyll plaunflet*, therefore I have compylyd it in a greter volume of dyverse bokys . . . to the entent that the forsayd ydle persones [who may care nothing for fishing] sholde not by this meanes utterly dystroye it."

The wisdom of such a course is now fully apparent, and has proved a lasting boon to anglers.

With regard to the authorship of the *Fishing*, we learn from some remarks under the head of "Carp" that it was a compilation partly from oral instruction, partly from "bokes of credence"—that is, from earlier manuscripts. The writer tells us that he was "loth to wryte more than I knowe and have provyd. But well I wote that the redde worme and the menow ben good baytys for him (*i.e.*, the carp) at all tymes, as I have herde saye

of persones credyble, and also found wryten in bokes of credence."[1]

So that, after all, it was not the earliest work on fishing, as many suppose, although the earliest printed treatise on the subject. In 1883 the late Mr Thomas Satchell, joint author with Mr Westwood of the invaluable *Bibliotheca Piscatoria*, printed what he called "An Older Form of the *Treatyse of Fysshynge with an Angle*, attributed to Dame Juliana Barnes," from a manuscript in the possession of Mr Alfred Denison, and previously in possession of Haslewood. It is described as "a fragment of a manuscript of the earlier part of the fifteenth century, forming a considerable portion of the little pamphlet first printed in the *Book of St Albans*." It is incidentally referred to in the "Advertisement" to Pickering's reprint of the *Treatyse of Fysshynge*, published in 1827, as having formerly belonged to William Herbert. From him it passed to Brand, and from Brand to George Isted, who presented it to Haslewood a few months before he died. Needless to say, it is of the highest interest and importance to literary anglers. That it is an independent text (says Mr Satchell) cannot be doubted, and in this opinion we are supported by the authority of Professor Skeat, who is inclined to assign it an earlier date than 1450. Though probably an older form of the treatise printed at Westminster in 1496, it is drawn from the same original, which, wherever it first came

[1] These words occur in an older form of the treatise to be noticed presently.

from, was at that time written in our language. The close correspondence in many passages forbids the idea that the two versions were independent translations from another tongue.

Here, then, we have a treatise on fishing which was in existence before the first edition of the *Book of St Albans* was printed, and yet was not included in it, being evidently unknown to Dame Juliana Berners and her printer. As there is no evidence to show that either of them had any hand in the productions of the Westminster press, we are forced to the conclusion that the popular notion which attributes the treatise of 1496 to Dame Juliana Berners is a fallacy, and the sooner this is recognised the better. It is not a little surprising that Mr Satchell did not view the matter in this light when writing his instructive preface to the "older form" above mentioned.

What literary anglers should now endeavour to do is to discover some of the earlier "books of credence" which were known to the writer of the *Treatise of Fishing*. They may still be preserved amongst the manuscripts in continental libraries, and should be looked for bound up with tracts on "Venerie," amongst which they have possibly escaped the notice of students more intent on the literature of other branches of field sports.

Probably few anglers are aware that in 1492, a small quarto volume on fowling and fishing, written originally in Flemish, was printed at Antwerp by Matthias van der Goes. Its extreme rarity may be judged from the fact that only one copy of the first

edition is known to exist. But the possessor of it, Mr Alfred Denison, in 1872 had it translated into English and printed twenty-five copies only. One of these it has been my good fortune to see, and a very curious little volume it is. A small quarto of two sheets only, the first sheet having no signature; the second has "B1" on the first leaf, and a full

AN ANGLER OF THE FIFTEENTH CENTURY.

page contains thirty lines. It is adorned with half a dozen quaint woodcuts, one of which is here reproduced from a tracing. It begins :—

"This little book shows how birds may be caught with the hands. And how fish may be caught with the hands and also otherwise. And also at what time of the year it is best for everybody to fish."

It concludes :—

"And this work was caused to be printed by Matthias van der Goes."

In an introduction to the translation, Mr Denison, quoting Holtrop (*Monumens Typographiques des Pays Bas au XVe Siècle*), recalls the fact that Matthias van der Goes printed at Antwerp from 1482 to 1491, in which year he died. His widow married his successor, Godfridus Bach, a bookbinder, on November 19, 1492, and the natural conclusion, therefore, seems to be that the little book was left in type by Van der Goes, and published soon after his death by Bach. Writing in 1872 Mr Denison expressed the opinion that it is the first known work on angling, since which date I am not aware that anything earlier has been discovered. It should be noted that his unique copy is a first edition, but another edition, without place or date, according to Westwood and Satchell (pp. 36, 37), is, or was, in the library of the Duc d'Arenberg in Brussels, while a third and much later edition is dated 1584. The very limited number of copies (twenty-five) of the English translation no doubt accounts for its being so little known to English anglers.

FISHES TRAPPED BY BLADDERWORT

So long ago as May 1884 the late Professor Moseley, of Oxford, made known a curious discovery by Mr G. E. Simms, of that city, who found that the bladder traps of *Utricularia vulgaris* are capable of catching newly-hatched fish and killing them. Mr Simms had brought him for examination a specimen of this aquatic plant in a glass vessel, in which there were numerous young Roach recently hatched from a mass of spawn lying at the bottom. Several of these small fish were seen to be dead, held fast in the grasp of the Bladderwort. Mr Simms then supplied a fresh specimen of the plant in a vessel with fresh young fish and spawn, and in about six hours more than a dozen of the fish were found to be entrapped. Most of them were caught by the head, which was usually pushed as far into the bladder as possible till the snout touched its hinder wall. In that position the two black eyes of the fish would show out conspicuously through the sides of the bladder. Less frequently a specimen was found to be caught by the tip of the snout. Several, however, were caught by the tip of the tail, which was more or less engulfed, and one was observed to be held by the yolk-sac. In three or four instances a fish had its head held by one

bladder trap, and its tail by another, the body of the fish forming a connecting link between the two bladders. This curious circumstance, with fuller details, formed the subject of an article by Mr Simms which was published in *Nature* of July 24, 1884, accompanied by an illustration. Professor Moseley stated he had not been able to see a fish in the actual process of being trapped, nor to find one recently caught and showing signs of life; all those found trapped were already dead.

Curiously enough, Darwin, in his account of the trapping of crustacea and worms by *Utricularia*, states that he also had been unable to observe the actual process of trapping, although Mrs Treat, of New Jersey, had often witnessed it. Professor Moseley thought that the mechanism by which the small fish became so deeply imbedded was to be explained by the fact, observed by Darwin, that the longer of the two pairs of projections composing the quadrifid processes by which the bladders of the *Utricularia* are lined project obliquely inwards, and towards the posterior end of the bladder. These oblique processes, set all towards the hinder end of the bladder, look as if they must act together with the spring valves of the mouth of the bladder in utilising each fresh struggle of the capture for the purpose of pushing it further and further inwards. Darwin had failed to detect any digestive process in *Utricularia*, and on cutting open longitudinally some of the bladders containing the heads and foreparts of fishes, Moseley found the tissues of the fish in a more or less slimy deliquescent con-

dition, which he attributed simply to decomposition. The quadrifid processses were bathed in this slimy animal matter, but although the processes themselves seemed to contain abundance of fine granular matter, possibly the result of absorption, the quantity of surrounding animal matter rendered the observation uncertain.

At a meeting of the Queckett Microscopical Club, held on February 20, 1903, a letter was read from Mr E. Ernest Green of the Paradenyia Gardens, Ceylon, stating that, although he had no acquaintance with the British species of *Utricularia*, he was quite sure that a small species of this plant found in Ceylon did capture and hold fish in the way described. Mr Green had witnessed the process in an aquarium of his own, and although the bladders of the Ceylonese plant are barely one-sixteenth of an inch in length, he had on several occasions seen young fish nearly an inch long securely held by their tails in these tiny but most effective traps.

Utricularia vulgaris, like other species of the genus (*major*, *minor*, and *neglecta*), is very local, growing in isolated patches in ponds and sluggish ditches, where coarse fish usually deposit their ova. This renders it as great an enemy to the small fry as wildfowl and otters are to the larger fish in streams and rivers, because for a considerable time after they emerge from the egg the young fish remain in the shallow water, and during this time great numbers of them must be killed by the vesicles of *Utricularia*.

Mr Simms observed that, except in cases where

the plant had been displaced by the action of the wind, he always found it growing on the shadiest side of a pond, and almost invariably hidden by other aquatic vegetation. From this he inferred that excess of light was prejudicial to the plant, and he remarked that if when kept in an aquarium it is exposed to the full glare of the daylight the valves seemed to lose their elasticity, and the vesicles become detached from the stem and drop off.

A knowledge of these facts may be useful to pisciculturists, who perhaps may not hitherto have suspected so curious a cause of mortality amongst young fry.

FISH-EATING BATS

By recent systematists Bats are divided into two great groups, generally regarded as sub-orders, namely, the *Megachiroptera*, or large bats, chiefly fruit-eaters, and the *Microchiroptera*, or small bats, most of which are insectivorous, but some of which are known to eat fruit.

In the former group, out of some seventy species recognised as distinct, more than one-half belong to the genus *Pteropus*, of which examples may always be seen in the Zoological Gardens. They are characterised by a long, fox-like face (whence the name "flying fox"), the ears simple and pointed or very slightly rounded, the margins of the ear meeting at the base, so as to form a circle, the nose without any leaf-like appendages, the tail very short or wanting, the interfemoral membrane, which in our common bats incloses the tail, reduced to very small dimensions, while the long thumb, and in most cases the first finger also, is armed with a strong claw. Finally, the molar teeth have flattened crowns, with a central groove in the direction of the length of the jaw.

In the other sub-orders of bats, which contains a much larger number of species (roughly speaking about 330 different kinds have been described)

the majority are characterised by a shorter muzzle; the margins of the ear, instead of meeting at the base, are inserted at a little distance apart, and have a membranous lobe springing from near their base, and the tragus, or anterior lobe of the ear, largely developed. Many have curious leaf-like appendages on the nose (as in the case of our British Horseshoe Bats), the tail usually long, with an expansive interfemoral membrane, and no claw upon the index finger. The molar teeth have sharp tubercles, separated by transverse furrows, producing a pattern like a W on each tooth.

These are the characteristics which, roughly speaking, enable us to decide offhand to which of the two great sub-orders any particular species of bat may belong; and although, as a general proposition, it may be asserted that the *Megachiroptera* are frugivorous, and the *Microchiroptera* insectivorous, the observations of naturalists in different parts of the world go to prove that there are exceptions to the rule, and that with certain species of both groups the food is, at least occasionally, of a mixed character, the result probably of a gradual adaptation of habits to altered conditions of life.

We have a good illustration of this in *Noctilio leporinus*, a bat which is widely distributed in Central and South America and the West Indies, and which, although stated by a good authority to be a member of the fruit-eating group of bats, belongs, in fact, to the insectivorous sub-order, as appears by the characteristic dentition and other

peculiarities above referred to. Linnæus described it as "victitans fructibus arborum," and in the intestines of specimens received from British Guiana Mr G. E. Dobson found some seeds of fruit, apparently *Morus tinctoria*. On the other hand, Von Tschudi, writing of its habits as observed in Peru, remarked that it lives in hollow trees and "feeds upon beetles, which we always found in their stomachs." Its insectivorous habits have also been noted in Brazil by Prince Maximilian Wied Neuwied, and in Jamacia by the late P. H. Gosse, who, having procured some live specimens from a hollow cotton tree, found that they fed eagerly on cockroaches. He says:—

"I presented to one a large cockroach, which he seized greedily and munched up, moving the jaws only vertically. The eating was attended with a loud and very harsh crunching of the teeth, not produced by crushing the horny parts of the insect, for it was equally perceptible when munching a bit of soft flesh. The jaws moved rapidly, but yet the mastication was a long operation, for it appeared to me to be performed almost wholly by the canines. As the insect was progressively masticated, portions were allowed to fall into the cheek pouches (the one being pretty well filled before the other was used), which when full hung down on each side of the lower jaw, like distended bags, displaying a warted surface. When the whole of one cockroach had been masticated, and deposited in the pouches, it would take another, which was gradually disposed of in the same recep-

tacles ; then after a few moments' intermission, by a contortion of the jaw, aided by the motion of the muscles of the pouch, a portion was returned to the mouth and again masticated. This was repeated till all was swallowed, and the pouches appeared empty and contracted up out of sight."

A more curious observation in regard to this same species of bat was made by the late Mr Fraser in Ecuador. He watched it skimming the bank of the river at Esmeraldas, every now and then making a dash along and actually striking the water, catching the minute shrimps as they passed up stream. The specimens of this bat which he secured were found to have a very offensive fishy smell.

But the most remarkable statement respecting the food and habits of *Noctilio leporinus* comes to us from Trinidad, where it is asserted that this species is common in caves upon the islands of the Bocas (or Straits), and preys upon the small fry of fish, which it catches by dashing down suddenly on the appearance of a shoal upon the surface of the water. The story is not new, having been told by the late Charles Kingsley many years ago ; but, although he saw the bats in question dashing down to the water at intervals, he missed the opportunity of satisfying himself of the object of their manœuvres, and it is only lately that conclusive proof has been obtained of the habits attributed to them by residents in Trinidad.

In his delightful volume, *At Last : a Chistmas in the West Indies*, which was published in 1871, and

which is only marred by the want of an index, the author says :—

"Early in January I started on an expedition to the islands of the Bocas. Our object was two-fold : to see tropical coast scenery and to get, if possible, some Guacharo birds (pronounced Huacharo), known also in the West Indies as Diablotin, and to ornithologists more familiarly as the oil bird (*Steatornis caripensis*). Our chance of getting them depended on the sea being calm outside the Bocas as well as inside (i., p. 181). The first islands which we made—the Five Islands as they are called—are curious enough. Isolated remnants of limestone, the biggest perhaps 100 yards long by 100 feet high, channelled and honey-combed into strange shapes by rain and waves (i., p. 182). As it grew dark, dark things came trooping over the sea, by twos and threes, then twenty at a time, all passed us towards a cave near by. Birds we fancied them at first, of the colour and size of starlings ; but they proved to be bats, and bats too which have the reputation of catching fish. So goes the tale, believed by some who see them continually and have a keen eye for nature, and who say that the bat sweeps the fish up off the top of the water with the scoop-like membrane of his hindlegs and tail. For this last fact I will not vouch, but I am assured that fish scales were found after I left the island in the stomachs of these bats, and that of the fact of their picking up small fish there can be no doubt. You could not, says a friend, be out at night in a boat and hear their

continued swish, swish, in the water without believing it. If so, the habit is a quaint change of nature in them, for they belong, I am assured by my friend Professor Newton, not to the insect-eating but to the fruit-eating family of bats,[1] which in the West as in the East Indies may be seen at night hovering round the mango trees and destroying much more fruit than they eat."

The story was revived in *The Field* of July 14, 1888, by Dr G. H. Kingsley, who had also visited Trinidad during the cruise of the *Northumbria*, and who, like his brother, had watched the movements of the bats in question, and listened to the statements of the natives concerning them. With a praiseworthy desire to ascertain the truth of the alleged fishing propensities, he floated about on many a hot evening to see how it was done; but though he was close to them—close enough to be nauseated by their detestable odour—he could never quite make up his mind on the subject. On the whole, he was inclined to accept the native idea that they scoop them off the surface with the interfemoral membrane; and he concludes: "However it was done, they certainly did catch fish, and eat them, for I found fish scales and bones in their stomachs, and had microscopical slides prepared to prove it."

Here, at last, was something definite to go upon; and a letter addressed to Dr Kingsley

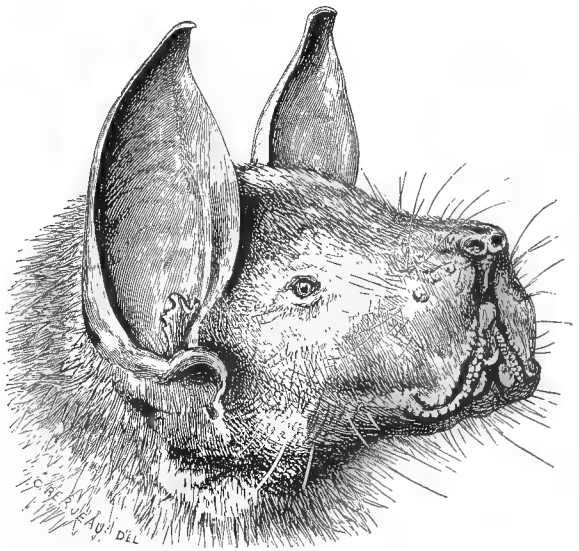
[1] This is a misapprehension, based possibly on what has been stated by Linnæus in regard to its food, as already quoted. There are no representatives of the fruit-eating *Pteropodidæ* in America.

speedily procured for me a sight of a stuffed specimen of the bat (whose species, until then, had not been named) and a slide containing a small portion of the contents of the stomach. These I exhibited at a meeting of the Linnean Society on November 15, 1888, and briefly called attention to the facts of the case. But, alas! the microscope revealed nothing that, in the eyes of such experts as Dr Günther and Dr F. Day, could be stated positively to appertain to fish; and it seemed more likely that certain minute iridiscent particles, which were at first supposed by Dr Kingsley to be fragments of fish scales, were portions of the shining wing-cases of coleopterous insects.

There seemed nothing for it, therefore, but to procure some freshly killed specimens of this bat in alcohol, and to examine carefully the nature of the entire contents of the stomachs. This, through the kindness of His Excellency Sir William Robinson, the Governor of Trinidad, I was enabled to do; for, acting upon his instructions, Professor M'Carthy, of the Government Laboratory at St Anne's, was good enough to forward to me three separate consignments of specimens, together with some microscopical slides of his own preparation, the examination of which has resulted in placing beyond all doubt the fact that in Trinidad *Noctilio leporinus* does habitually prey upon small fish. These specimens were exhibited by me at a meeting of the Linnean Society on February 21, 1889. In three separate reports which accompanied the specimens sent to me at intervals during the spring of that

year, Professor M'Carthy detailed the result of his own observations of the living animals, and his examination of some of the specimens he procured. The following extracts are especially interesting :—

"On December 29 I proceeded to Monos, and at 9 p.m. visited a cave on the east side of the island



HEAD OF *NOCTILIO LEPORINUS*.
(*Twice the Natural Size.*)

on the first Boca. This cave is in a soft shale formation, and the top of the opening is about 7 feet from the water at full tide. The bats were then in an active state, and the majority appeared to be flying homewards. There were few fish near the surface of the water, and comparatively little local fishing appeared to be going on. An occasional 'swish' now and again far out proved that the bats

were trying to secure their prey. Five homeward-bound specimens were secured in the cave about twelve yards from the mouth. The stomach of one specimen, opened within half an hour, contained much fish in a finely divided and partially digested state. . . . On the morning of the 31st I visited the cave from which the specimens were procured at 3 a.m., and found that the bats had apparently forgotten the previous disturbance. They came flying in in dozens, and two specimens were secured. Both contained considerable quantities of fish. . . . I have opened several other specimens of the bats, and in the majority of cases fish scales were found; but the stomachs of two were perfectly empty. This might be attributed to the absence of the desired fish in the locality" [or to the fact that they were shot before they had had time to catch any].

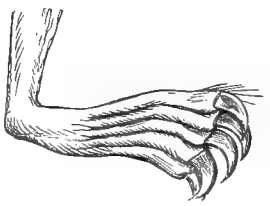
Referring to the mode in which the bats capture the fish, Professor M'Carthy says:—

"My opinion, from what I have ascertained (though I have not actually *seen* the operation, I have *heard* it) is, that the bats skim the surface, peering at the same time into the water below. As soon as fish are observed the interfemoral membrane is let down, and occasions the 'swish' so frequently heard. At this time the fish is secured by the claws immersed in the water, and is possibly raised with the assistance of the membrane, and so held until the mouth is reached down below the body, and the fry devoured. I am inclined to attach more importance to the use of the membrane as a means of coming to a sudden stop, than as a lifting medium,

which may possibly be done or assisted by the wings. It is believed that the fish are sometimes lifted out by the membrane alone being employed as an impervious net."

In a subsequent report he says :—

"On January 15 I went in an open boat by Carenage to the Five Islands, and crossed to Point Gourd. . . . I remained the night in the locality, and observed bats continually. Some partially dived for fish within fifteen yards of the boat, but this was before we commenced to try and shoot them. I see no reason to change the opinion expressed in my previous report respecting the manner in which the fish is secured, and subsequently disposed of. There is no doubt but that the immersion of the interfemoral membrane and the securing of the fish are simultaneous movements."



FOOT OF *NOCTILIO LEPORINUS*. (*Natural Size.*)

After some further remarks, he concludes :—

"A microscopic examination of some of the excrement, collected in the caves frequented by these bats, proved the presence of chitin from a beetle's leg and scales from the wing of a butterfly. This would tend to show that when fish food is scarce (or unprocurable) the bats can accommodate themselves to insect food."

After this circumstantial account by Professor M'Carthy, confirmatory as it is of all that had been previously stated by Messrs Kingsley, it is impossible

to withhold credence to this very curious story; but if further testimony be needed, I have only to add that the contents of the stomachs which I removed from the specimens received from Professor M'Carthy were carefully examined by Professor Stewart, of the Royal College of Surgeons, who recognised fish scales and fin rays, while one of the prepared slides shows very distinctly the lower jaw with the teeth of some small fish. The late Professor G. B. Howes reported that, of two specimens examined by him, the stomach and intestine of one were empty, and that the intestine of the other yielded muscular fibre, and some finely divided organic matter. The fæces were remarkable for their oily nature, the whole field of the microscope being studded with oil globules in varying stages of emulsification. The muscular fibre was little digested, and laden with fat in the manner well known for fishes.

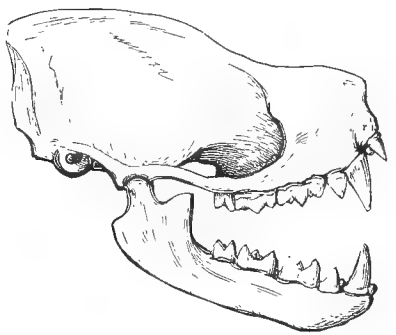
That the dentition of *Noctilio leporinus* is not unsuited to a fish diet may be inferred from the figure here given of the skull, with distended jaws, drawn twice the natural size in order to exhibit the teeth more clearly, while it may well be supposed that a bat which could so easily crunch up cockroaches, as observed by Mr Gosse, would find no difficulty in disposing of the softer bodies of delicate fish fry.

The dental formula, as may be inferred from the sketch, is:—

Incisors, $\frac{4}{2}$; canines, $\frac{1—1}{1—1}$; premolars, $\frac{1—1}{2—2}$; molars, $\frac{3—3}{3—3}$.

The stomach, which is little more than a sac-

like distention of the intestine, would certainly be capable of receiving without injury the finely comminuted portions of fish swallowed after the elaborate process of mastication described by Mr Gosse. The large and powerful hind foot above figured might well perform the office attributed to it in seizing the fish, either with or without the assistance of the interfemoral membrane. To give some idea of the size of this Bat, it may be observed that the length, from tip of nose to the end of the extended interfemoral membrane, is $5\frac{1}{2}$ in.; the length of head and body only, $4\frac{1}{4}$ in.; length of fore-arm, $3\frac{1}{2}$ in.; the hind foot, 1 in.; and the expanse of wing, 16 in. The general colour I should describe as orange tawny. In conclusion, it may be remarked that *Noctilio leporinus* is not the only species of bat which has been reported to catch fish. So long ago as 1863 Dr J. Shortt, in a communication to the Zoological Society, dated "Chingleput, June 12, 1863," reported his having witnessed on two occasions at Conleeveram during the previous April the fishing propensities of the *Pteropus* of India, which he named *P. edulis*, but which was doubtless *P. medius*, the only species of this genus which is known to inhabit the peninsula of India.



SKULL OF *NOCTILIO LEPORINUS*.
(*Twice the Natural Size.*)

On the occasion referred to, he says (*Proc. Zool. Soc.*, 1863, p. 439): "I got my assistant, Mr Watson, to bring his gun, and shoot some, so that I might satisfy myself of the identity of these animals. Mr Watson shot some two or three, whilst in the act of seizing (as he supposed) their finny prey, and on examination I found them to be actually 'flying foxes.' During a second visit on the 5th and 6th of June, I observed the same thing occur again."

Blanford, who has figured the skull of *Pteropus medius*,[1] agrees with Jerdon in thinking that the habit with this species of skimming over water in the evening has been mistaken for fishing. He has no doubt it is for the purpose of sipping the water, and this is also the opinion of Col. Tickell, who has published a good account of its habits in the third volume of the *Calcutta Journal of Natural History*. This peculiarity is not confined to the *Pteropodidæ*. I have observed it in some of our British Bats.

[1] *Fauna of British India* (Mammals), p. 256.

NATURE STUDIES IN JAPANESE ART

It is impossible to examine the work of Japanese artists without being struck by the wonderful appreciation of Nature which they everywhere display. No one who possesses any knowledge of animals or plants can have failed to remark how truthfully a great variety of forms are depicted, and how skilfully the native artist borrows from Nature all that is most expressive in action, elegant in outline, and beautiful in colour. Hence in the representation of flowers, foliage, and birds, for decorative purposes, the Japanese have no rivals.

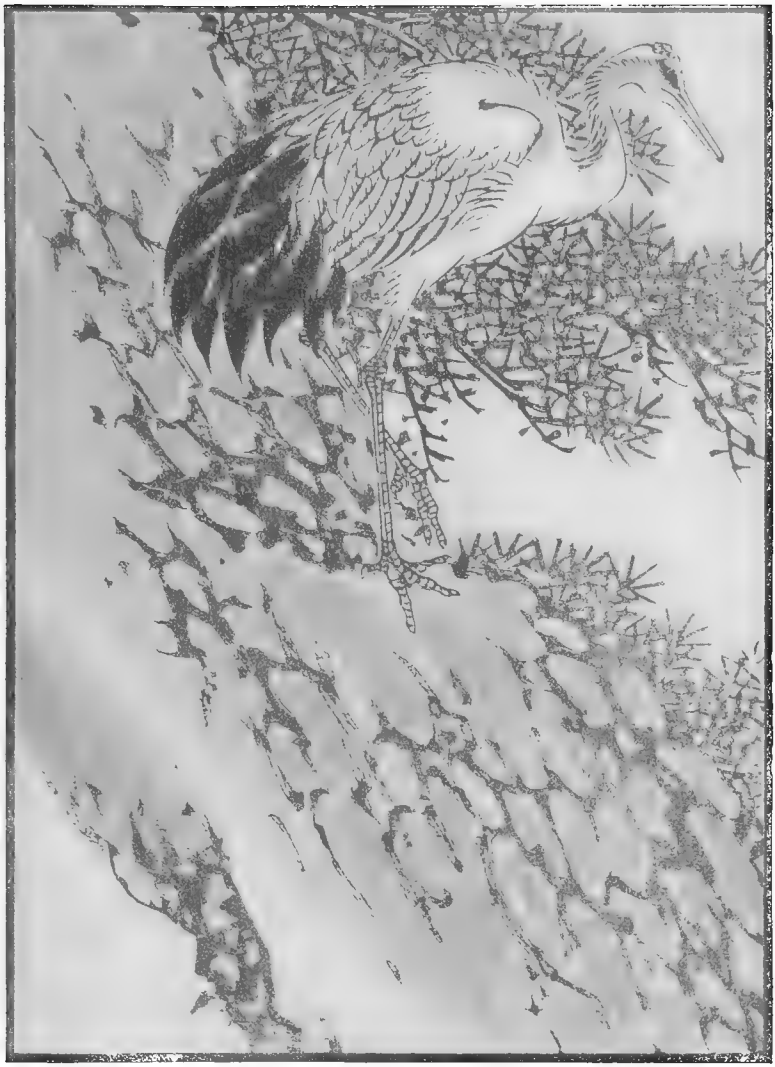
The flowers most commonly met with in Japanese art are the Chrysanthemum, Peony, Wistaria, Iris, Lily, Hydrangea, Carnation, Convolvulus, and Water-lily; but several other flowers indigenous to Japan are used for ornamentation in combination with the above. The Hydrangea, Convolvulus, and Water-lily are very often depicted on works of lacquer and porcelain, the Convolvulus, from its creeping habit, being an especial favourite in free design.

The trees most frequently met with are the Kiri (*Paulownia imperialis*, Siebold), Plum, Fir, and Palm, the flowers of the Plum being special favourites in ornamentation. Reeds, creeping

plants, and grasses of all descriptions are favourites with the Japanese artist; and in the first class the stately Bamboo holds the most prominent position, on account of its almost universal utility and the symbolic value attached to it; for, like the Fir, it is regarded as the symbol of longevity on account of its generally-supposed long existence. Kæmpfer was informed that it will grow for centuries, and, in support of that statement, was shown specimens which had reached the most extraordinary dimensions.

Next to vegetation, the artists of Japan are most skilled in the representation of birds; and they appear to have an equal love for depicting them either alone or in combination with foliage. The natural habits of birds supply an inexhaustible source of study, and one may observe everywhere in the work of these artists how painstaking they are in its prosecution, by the care and accuracy with which characteristic positions are rendered. It is chiefly in their pottery, lacquer, illustrated books, and original drawings that we find the best specimens of their skill in this department, although some choice examples are to be met with in metal work and in ivory carvings. Let the material, however, be what it may, wherever there is a bird depicted there is room for study, and cause for admiration.

The birds most frequently represented, and consequently the most carefully studied by Japanese artists, are the Crane, tame and wild ducks, Wild-goose, Peacock, Pheasant, Raven, Goshawk,



A JAPANESE CRANE.

Falcon, ordinary domestic fowls, and several of the smaller birds common to the country.

The Crane (*Tsuru*), according to Kæmpfer, is the chief of the wild birds in Japan, and has the peculiar Imperial privilege that nobody can shoot it without an express order from the Emperor, and only for the Emperor's own pleasure or use. It is held in a sort of semi-veneration by all classes of the community in Japan, and is, on account of its supposed long life, very generally accepted as an emblem of longevity. For these reasons it is one of the greatest favourites with the artists of the country, and is introduced in ornamentation throughout the entire range of their arts. It is treated in countless ways; it is, indeed, impossible to imagine any position the living bird could assume which is not depicted by the Japanese artist; and it would be difficult to find anything more artistic, from a decorative point of view, than their manner of treating it in these varied positions. A remarkable fact in connection with the Crane is that the Japanese avoid representing it as dead. Messrs Audsley and Bowes, in their beautiful work, *The Keramic Art of Japan*, state that, during many years' study of Japanese art work, they do not remember to have once seen a representation of a dead Crane. This, they observe, may be satisfactorily accounted for by the symbolic value attached to the bird, for a dead Crane would scarcely be an expressive emblem of longevity. In lacquer work Cranes are very often introduced in the ornamentation, and are exquisitely manipu-

lated in gold and coloured lacquers, or carved in ivory or mother-of-pearl, and attached to the surface.[1] In metal work also this bird is frequently met with either cast in bronze, or wrought in the precious metals, relieved in the coloured portions with other metals or alloys. Again, we may often see Cranes very skilfully embroidered in fine twisted silk, with every important feather very beautifully and accurately wrought. When the birds are drawn in upward flight, they are usually surrounded with conventional clouds, giving the idea of space; when they are shown in downward flight, a few tops of trees appear at the bottom of the picture, graphically indicating their near approach to earth.

A law existed in Japan, and is believed to be still observed, that no firearms should be used within a radius of thirty miles from the Imperial palace. This encouraged to a great extent the sport of falconry, and consequently the taste for depicting its scenes. Captain Blakiston, who has paid much attention to the birds of Japan, states that the Goshawk is the bird most used by the

[1] One of the most striking examples of this kind of work I saw in the Japanese Court at the Paris Exhibition of 1889. It was a very beautiful folding screen of lacquer inlaid with ivory and mother-of-pearl, on which was a spirited representation of crane-hawking with white falcons. On one side a Crane, struck down by a Falcon, was lying with extended wings in the act of being seized by the hawk. The former bird was of ivory in alto-relief, the latter of mother-of-pearl. The workmanship was marvellous; every one of the primary feathers, quill and web, being exquisitely carved. Indeed I have never seen anything of the kind at all comparable to the extended left wing of that Crane.

Japanese for hawking—a sport which was much practised in feudal times, but is little kept up now. To the cause of this decline I have adverted in an article on "Hawking in Japan," which appeared in *The Field* of October 18, 1879.

The screens which the Japanese so commonly use in their dwellings as temporary partitions, like the notable example above-mentioned, and their indispensable fans, are frequently painted with sporting scenes; while many books entirely devoted to falconry are printed, in which quaint yet charming woodcuts are to be found. Both in hand-paintings and woodcuts we find repeated evidence of skill in bird drawing, with every conceivable position and action of the hawk and its quarry delineated.

Falcons (*Taka*) and Eagles (*Washi*), according to Messrs Audsley and Bowes, do not appear on works of ceramic art or lacquer so frequently as Cranes and some other birds, but when they are represented, they quite sustain the credit of the Japanese artist.

Pheasants (*Kiji*) are great favourites, and are very often introduced in ornamentation. Ducks of several kinds are portrayed, an especial favourite for its beautiful colours being the Mandarin Duck (*Oshi kamo*). The drake and duck of this remarkable species, when represented together, are accepted by the Japanese as the emblem of conjugal felicity. The Wigeon, which is very common in Japan in winter, we may often see well depicted.

The Peacock (*Kujaku*) appears as a decoration in all materials, and is commonly portrayed on

pottery and porcelain, being drawn in blue by the Hizen artists, and in brilliant colours by those of Satsuma. The Peacock is not a native of Japan, but of India, whence it was transported eastward into China, and eventually into Japan.[1]

The Wild-goose (*Gan*) is very skilfully treated by Japanese artists, and, like the Crane, is depicted in a variety of attitudes. Representations of ordinary domestic fowls are frequently to be met with, and are usually drawn with great accuracy. Cocks are commonly kept in Temple grounds, where they are carefully attended to by the priests and others, because they foretell changes in the weather, and by the regularity of their crowing mark the passage of time. This no doubt, as suggested by Messrs Audsley and Bowes, accounts for the frequent representation of the cock perched on the top of a Temple drum.

These are some of the more important birds commonly to be met with in Japanese works of art. Amongst the smaller birds easily identified are the Coal Titmouse, the Long-tailed Titmouse, the Redstart (*Ruticilla aurorea*, Pallas), the Tree Sparrow (*Passer montanus*, Linn.), which is the domestic sparrow of Japan and China, the sexes being alike in plumage; and the Bullfinch (*Pyrrhula orientalis*, Temm. and Schleg.), which is much valued by the Japanese as a cage-bird. With such fidelity to nature are all these depicted, that there is no mistaking the species intended.

[1] See the article "Peacock" in Hehn's *Wanderings of Plants and Animals from their first home*, 1885, p. 263.

THE TREE SPARROW.

Of all natural objects quadrupeds are less frequently represented. This is probably due to the fact that wild animals are not numerous in Japan, and the artists have seldom any favourable opportunities for actual study of them from the life. Of all quadrupeds, perhaps the Horse is most frequently depicted, and often with great skill and knowledge of foreshortening. Other animals represented with much artistic power in carvings and metal work are Oxen, Deer, Bears, Dogs, Cats, and Rats; while in humorous ivory carvings no animal is so frequently met with as the Monkey or Ape, which especially lends itself to the treatment of the grotesque.

Of Fishes and Crustacea the Japanese seas yield a great variety, many of them remarkable for their brilliant colouring; and these are everywhere to be met with in Japanese art work, depicted with considerable skill. A favourite subject is a Carp in the act of ascending a waterfall; and in grotesque carvings the Octopus, or Devil-fish, is often very cleverly introduced. Shells are great favourites in ornamentation, particularly in that of lacquer work, where, executed in richly raised gold and tinted lacs, they produce very pleasing effects. Coral and seaweed are likewise introduced, sometimes along with shells, at other times alone, but always with marked success.

Both Reptiles and Insects are pressed into the service of the artificer, and are truthfully represented wherever they are introduced. Insects, indeed, are almost as frequently figured as birds

A JAPANESE DRAGONFLY.

and fishes. They are wrought in coloured materials upon such objects as ivory boxes, fan handles, buttons, and the like, carved with the utmost fidelity in *netsuke*, sculptured and inlaid in bronzes, painted on fans, screens, and all articles of porcelain, faïence, and lacquer.

I should like to have been able to give here the figure of a beautiful bronze in my possession of an Eagle with outstretched wings, by a Japanese artist. The modeller had evidently made a study from Nature, and the fidelity with which the extended wing feathers have been copied in metal is very remarkable.

There is perhaps nothing which astonishes the student of Japanese art so much as the immense variety which it presents in the treatment of natural objects. This, say the authors of the work above quoted, is to be accounted for by the fact that each work is the result of individual genius. Manufactories, in our sense of the word, may be said to have been unknown in the best days of the empire; each and every artist or artisan worked out his own inspirations according to his own ideas, and in his own way. Hence it is that we find in almost every thing which has come from Japan so much variety and originality.

BIRDS AND LIGHTHOUSES

A SINGULAR incident of bird life, of which most people have read, but few perhaps have personally witnessed, is the attraction which lighthouses present to many species of migratory birds when passing to and fro upon their periodical migrations. Those whose business and occupation it is to dwell in the lighthouses and tend the lamps to save our vessels from destruction, tell us that at certain seasons of the year vast flocks of birds are seen making for the land, and numbers of them, impelled by some strange infatuation, dash wildly against the lantern, and often perish from the concussion.

Out in the North Sea, Heligoland lies right in the track of all the migratory birds which pass to and from the east and north-east of Europe. This, to ornithologists, is a famous post of observation; and through the agency of an excellent naturalist resident there, Herr Gätke, some curious statistics on migration have been collected. Mr H. Seebohm, who made a short stay on this island, has graphically described what he witnessed on visiting the lighthouse there one night in October, just as the autumnal migration had commenced. He says:—

"At half-past twelve I was awoke with the news that the migration had already begun. Hastily

dressing myself, I at once made for the lighthouse. The night was almost pitch dark, but the town was all astir. In every street men, with long lanterns, and a sort of angler's landing-net, were making for the lighthouse. Arrived there, an intensely interesting sight presented itself.

"The whole of the zone of light, within range of the mirrors, was alive with birds coming and going. Nothing else was visible in the darkness of the night but the lantern of the lighthouse vignetted in a drifting sea of birds. From the darkness in the east clouds of birds were continually emerging in an uninterrupted stream; a few swerved from their course, fluttered for a moment as if dazzled by the light, and then gradually vanished with the rest in the western gloom. Occasionally a bird wheeled round the lighthouse, and then passed on; and occasionally one fluttered against the glass, like a moth against a lamp, tried to perch on the wire-netting, and was caught by the lighthouse man.

I should be afraid to hazard a guess as to the hundreds of thousands that must have passed in a couple of hours; but the stray birds, which the lighthouse men succeeded in securing, amounted to nearly three hundred. The scene from the balcony of the lighthouse was equally interesting; in every direction birds were flying like a swarm of bees, and every few seconds one flew against the glass. All the birds seemed to be flying *up wind*, and it was only on the lee side that any were caught; they were nearly all Skylarks. In the heap captured was one Redstart and one Reed Bunting. The air

was filled with the warbling cry of the Larks ; now and then a Thrush was heard ; and once a Heron screamed as it passed by. The night was starless, and the town was invisible ; but the island looked like the outskirts of a gas-lighted city, being sprinkled over with brilliant lanterns. Many of the Larks alighted on the ground to rest, and allowed the Heligolanders to pass their nets over them. About 3 a.m. a heavy thunderstorm came on, with deluges of rain ; a few breaks in the clouds revealed the stars, and the migration came to an end, or continued above the range of our vision."[1]

In giving similar testimony to the effect so graphically described by Mr Seebohm, the light-house-keepers on our own shores confirm what has been known almost since the world began (for do we not read in Scripture that birds "have their appointed seasons"?) and state that the coming and going of certain species at particular periods of the year may be looked for and observed with singular regularity. This remarkable habit is termed "migration," and notwithstanding that few natural phenomena are more familiar, none perhaps still remains so shrouded in mystery. The migration of birds has attracted the attention of observers in all ages and of all nations, yet few questions in ornithology are more difficult of solution than the problem "Why and how do birds migrate?" what innate force impels them seasonally in a particular direction? and how do they find their way? Before attempting to suggest answers to

[1] *Siberia in Europe*, p. 256.

THE LIGHTHOUSE IN MIGRATION TIME.

these questions, it will be well to state a few facts; and I will presently endeavour to explain the nature of the connection between birds and lighthouses, and show what important assistance has been given towards a solution of the problems concerning migration through the instrumentality of those who daily and nightly keep watch along the shore.

The true "home" of a bird is undoubtedly the country, or district, in which it makes its nest and rears its young. Some species seldom or never quit their homes, and are termed "residents"; others do so periodically, and are termed "migrants" or "birds of passage." The latter are commonly divided into three classes: "summer migrants," "winter migrants," and "birds of double passage," or those which visit us in spring or autumn. The "summer migrants" are those which come to us from the south in spring, pass the summer with us, bring up their young here, and depart southward again at the approach of winter. Familiar examples of these are the Hobby, Red-backed Shrike, Fly-catcher, Redstart, Wheatear, Reed Warbler, Nightingale, Blackcap, Garden Warbler, White-throat, Willow Wren, Yellow Wagtail, Tree Pipit, Woodlark, Wryneck, Cuckoo, Swallow, Swift, Nightjar, Turtle Dove, Stone Curlew, Common Sandpiper, Landrail, Garganey, Puffin, Razorbill, Kittiwake, and several species of Tern.

The "winter migrants" are those which, having reared their young in latitudes north of the British Islands move southward about the same time that our "summer migrants" are travelling in the same

direction, but stop short (many of them) at the English Channel, and make this country their winter quarters. Familiar examples of these are the Merlin, Short-eared Owl, Grey Shrike, Fieldfare, Redwing, Shore-lark, Snow Bunting, Waxwing, Crossbill, Grey Crow, Golden Plover, Woodcock, Snipe, Jack Snipe, Bittern, and many Ducks, Geese, and Swans.

The "birds of double passage" are those which come up from the south in the spring with our "summer migrants," but, instead of remaining here with them to rear their young, pass on to breeding quarters further north or north-east, whence they return in autumn with our "winter migrants"—not to stay here, as a rule, but to pass still further south for the winter.

Formerly it was a matter of mere conjecture where Swallows passed the winter, some people asserting that they did not leave this country at all, but hibernated in hollow trees and cliffs; while others even went so far as to state that they did so *under water*, a notion evidently founded on incomplete observation of the bird's habits. Their attachment to the neighbourhood of water at all times is noticeable. They find plenty of insect food there. Their being there at roosting-time may be accounted for by the circumstance that reeds and willow branches not only afford them most convenient perches, but enable them to crowd close together, and so secure greater warmth to individuals than they could possibly enjoy if each roosted upon a separate twig in trees or shrubs of different growth. Superficial observers, seeing a number of Swallows

at dusk dash down towards the water and disappear, gravely asserted that they had seen them go under water. And this erroneous idea seemed to them to be confirmed by the discovery of the skeletons of Swallows in the mud at the bottom of pools, when the water had been drawn off for the purpose of cleaning out the pond. These skeletons are merely the remains of Swallows of too venturesome flight, which, having skimmed too close to the surface, have got their plumage saturated, and perished in their struggles to rise again. The fact that certain mammals, like the Dormouse, pass the winter in a lethargic state no doubt lent some colour to the suggestion that possibly Swallows did the same; and even now the possibility of hibernation amongst birds is not altogether denied. But the alleged evidence on the subject is practically ignored, for the reason that our present knowledge of their seasonal movements precludes the necessity for any such theory to account for their disappearance in cold weather.

It may be said that we now know with tolerable certainty the winter haunts of all our summer visitors. To take the Chimney Swallow as a familiar instance. This bird, roughly speaking, spends six months of the year in the British Islands, that is to say, from April to October. Between these two months it is found generally distributed throughout Europe, going up through Lapland, Norway and Sweden as far north as Iceland and Novaya Zemlia, and penetrating even into Siberia and Amurland.

In the countries bordering the Mediterranean it is especially abundant at the periods of migration in spring and autumn. Mr C. A. Wright, of Malta, observed it arriving there in great numbers from the south early in March; and again, on its return southwards in autumn, it is common over the whole island until October. In Spain Mr Howard Saunders detected it as early as February making its way north. As an instance of how these delicate birds at times get blown out of their course by adverse winds, it may be remarked that Prince Charles Bonaparte saw Swallows and Martins at sea 500 miles from Portugal and 400 miles off the coast of Africa. The late Mr Osbert Salvin saw Swallows come on board the ship he was in when 180 miles north-west of the Azores.

South of the Mediterranean Swallows may be seen on the Senegal River and at Sierra Leone all the year round, although less numerous there from June to September; and on the west coast they appear to go as far south as the island of St Thomas on the Equator, where they have been observed in January and February.

All along the north coast of Africa, through Morocco, Algeria, Tripoli, and Egypt, into Nubia, Swallows are seen throughout the winter months, and pass down the east coast through Abyssinia, Zanzibar, and Natal to the Cape Colony, where they are regular winter visitants. The late Mr Edgar Layard, when sailing from New Zealand to the Cape, saw a Swallow and a Sand Martin flying round the ship for some time on November 28,

the vessel being then about 290 miles from the Cape.

Passing eastward through Sinai and Palestine, where Canon Tristram has observed the Swallow in December, we find it common in the north-west provinces of India during the winter months, at which season also it occurs in Japan, China, the Andamans, and Ceylon. There is no evidence that it ever visits Australia or New Zealand, although Gould described a Swallow from Torres Straits (under the name *Hirundo fretensis*), which is certainly very like our well-known *H. rustica*, and might be a young bird of that species in autumn plumage.

Did space permit, it would be as easy to trace the movements of most of our summer migrants during the various months of the year, for (as above stated) they are now tolerably well known.

It is a curious fact that with many migratory birds (as, for example, the Nightingale and Blackcap) the males arrive here several days before the females. I have never met with any satisfactory explanation of this; but it seems to me it may be accounted for in this way. The rate of speed in flying, depending upon individual strength, is different in the two sexes, and if they were to start together, the superior strength and wing power of the males would result in overtaxing the strength of the hen birds, which, in their efforts to keep pace, would exhaust themselves, and succumb on the journey, thereby disorganising the flock. It is probably for this reason that the sexes travel

separately, and apart. Each goes its own pace, and the flocks then keep well together on their route.

Another fact which has been ascertained and placed beyond doubt by experiments made at various times and places, is that the same individual birds return year by year to particular spots where they have successfully reared their young. This has been proved by the experiment of catching birds on the nest without injuring them, marking them by tying silver wire or coloured twine round the legs, and restoring them to liberty. The following year the marked birds have been caught in their old haunts! Nowadays, therefore, no one doubts the *fact* of migration. What we want to know, however, is the *cause* or *causes*, the manner *in which*, and the faculty *whereby* it is performed.

It is remarkable that until quite recently no English ornithologist had set himself earnestly to work to try and solve these problems. It is true that for the last century, ever since the days of Gilbert White and Markwick (whose "Calendars of Nature" are so familiar to us), hundreds of persons have amused themselves with noting the earliest and latest dates of arrival and departure of migratory birds, and some of them have carried out the practice for many years. But they have done nothing more. Their observations have brought us no nearer to a solution of the questions at issue. Indeed the great mass of such reports of the arrivals of migratory birds as are annually

printed in natural history journals are practically useless. Those published under assumed names or initials would be, of course, ignored by any statistician taking up the subject, since they neither afford evidence of the competency of the reporter, nor furnish means of instituting a correspondence should inquiries be necessary to clear up doubtful statements, or elicit further information. But even supposing that such reports were properly authenticated, they would not serve to explain the cause or causes of migration, or the faculty by which it is performed; they would at most only tend to elucidate the manner in which birds migrate, by fixing the line or lines of the route which they take.

In this country no one seems to have been at the pains to collect and arrange the authenticated records of arrival and departure with this object until in 1879 a Committee of the British Association was appointed for the purpose. But in Russia an attempt of the kind was made in 1855 by Dr von Middendorf, who published at St Petersburg an important treatise on the subject.[1] He collated the records of the arrival of migratory birds throughout the Russian empire, and endeavoured to trace the lines of simultaneous arrival (as indicating the route taken) by ascertaining the average date of arrival of each species at localities where observations had been regularly taken, and connecting

[1] *Die Isepiptesen Russlands.* ἴσος = equalis; ἐπιπτησις = advolatus, or, as we may term it, the lines of simultaneous arrival.

these places by lines on a map for each species. The lines thus drawn show the equality or inequality of advance made by the species in different longitudes, and, assuming that this advance is right across the isepiptesial lines, or the tract lying between each pair of them, the route of migration is thus clearly indicated. The conclusion at which he arrives is, that in Central Siberia the general direction taken by migratory birds (he enumerates seven species) is almost due north, in Eastern Siberia from south-east to north-west, and in European Russia from south-west to north-east.

Another Continental naturalist, Herr Palmen, pursuing a similar line of inquiry, published, in 1874, at Helsingfors, an important work (originally in Swedish, afterwards translated into German) on the migration of birds, in which he also endeavoured to trace the general routes taken, and to explain the cause or causes of migration.[1]

The routes usually pursued he believes to be nine in number; and, if we mark these out on a map of Europe, it must be confessed they appear somewhat confusing, as so many of the lines cross, and the evidence that such routes as those indicated are taken seems scarcely strong enough to establish the facts contended for. In fact, these routes are merely conjectural. Moreover, it is evident that the routes must vary, as proved by the absence or scarcity in some years of particular species along a line of route on which they are usually common.

Dr Weissmann considers, and so also does

[1] *Ueber die Zugstrassen der Vögel.* 8vo. Leipzig, 1876.

Dr A. R. Wallace, that there is a connection between the routes taken and the position of submerged land over which the birds migrated in past ages. Possibly this may be so, though probably the connection is accidental. At anyrate, to prove the case, it would be necessary to show that the habit of migration is older than the subsidence of the submerged land, and that the migrants prefer a longer route over a shallow sea to a shorter route over a deep one.

From what has been actually observed, it would appear that birds on passage, as a rule, follow the coast lines, the courses of great rivers, and the low country lying at the base of mountain chains.

As regards the direction taken by migrating flocks, I shall presently invite attention to what English naturalists have been able to advance on this point, through the instrumentality of the lighthouse keepers; but, before taking leave of the Continental authorities just quoted, it may be well to consider their views (shared as they are by many of our ornithologists) respecting *the cause of migration*, and the *faculty* by which it is performed.

It would seem that there are at least three primary causes for the migration of birds: (1) failure of food at certain seasons; (2) change of temperature; and (3) what may be termed "home-affection," or a longing to return to the real home, which (as before stated) is the country where it rears its young, or where it has itself been reared.

It is the *first* of these causes apparently which

influences the departure in the autumn; the *third* of these which provokes the return in spring; while the *second* may be allowed to have an important bearing on the movements of birds at all seasons.

In making this statement, it should be observed that I am not putting forth the views enunciated by any particular writers to whom I have referred, but am rather stating the conclusions at which I have arrived after some consideration of the subject, and a perusal of what they and others have written.

As regards the *faculty* by which migration is performed, it is much more difficult to express an opinion, although I might give expression to the views of others who are much better able than I am to form a judgment in the matter. Before coming to any conclusion on this point, however, it seems desirable to consider first the probable origin of the instinct of migration.

It is not unreasonable to assume that the change in climate at the close of the Tertiary period, which reduced the temperature of the higher latitudes from warm temperate to frigid conditions, must have resulted in the crowding of bird-life towards the equator, thereby intensifying the struggle for existence to such a degree, that overcrowding would induce those species best able to withstand climatic change to avail themselves of the milder interim of summer to enlarge the boundaries of their range, while the recurrence of winter would force a temporary removal to milder regions.[1]

[1] I have here adopted the views, in his own words, of a well-known American ornithologist, Mr J. J. Allen.

Granting the hereditary nature of habit now so generally conceded, we have at once conditions for the development of a new instinct, at first doubtless feeble and uncertain in action, but strengthening by exercise, and by the inevitable "weeding out" of individuals in whom it was weakest.

With the increased diversity in the conditions of environment called into existence by the great climatic and other changes occurring at or near the close of the Tertiary epoch, there was greater play for the modifying action of physical influences, resulting in the development of new specific types, as well as the instinct of migration.

Accepting this as the probable origin of migration, we have then to consider how birds are guided in their long journeys. Their ability to find their way across continents and over vast tracts of desert, or sea, is doubtless the result of heredity of habit and the experience of individuals. We are all familiar with the "homing" instinct in carrier pigeons, and with the remarkable way in which lost dogs find their way back to their masters from considerable distances. We have all wondered, too, at the extraordinary way in which birds from a distance will return straight to a well-concealed nest in the middle of a field, marsh, or wood, or in the midst of heather or thick furze. To do this, and to find out an old nesting-place after an interval of many months' absence from the country, implies an exercise of memory as true as it is astonishing.

Again, the power of vision in birds is very great, far greater than it is in man, as I have been able

to prove by a very good test.[1] They are thus enabled to perceive landmarks at a distance which *to us* would be invisible. Practice, or the experience gained by individual birds which have previously made the same journey, must be taken into account when considering how the migrating flocks are led. No one of these causes by itself seems sufficient to explain how migratory birds are guided in their journeys, but, taken collectively, it may be fairly assumed that *heredity of habit*, combined with *acute vision*, *memory*, and *experience*, explain what otherwise seems so great a mystery.

In the case of adult birds only can we fairly allege individual experience and memory as the cause. This cannot apply to young birds, which make their journey for the first time; or to those which in the autumnal migration precede their parents (as it is well-known many species do) by intervals of some days or even weeks. This, however, only strengthens the view that the instinct of migration is really *transmitted habit*, and that the knowledge of routes depends more upon inherited than individual experience. When we consider that this heredity has been in operation for thousands of generations of migratory birds, it may well be supposed to have acquired a force sufficient to preclude the necessity for a knowledge of routes acquired through individual experience.

There is one more point in connection with the general subject of migration upon which a brief

[1] See *Essays on Sport and Natural History*, 1883, p. 126.

remark or two may be made. I refer to the accidental appearance of solitary migrants at places far out of their usual course. These wanderers are almost invariably observed during the autumn migration, and are almost always birds of the year. To account for their erratic appearance, we have only to assume that by some accident they have lost the sense of direction, or that they have been blown out of their course by storms or adverse winds. The observations of ornithologists certainly tend to prove that the latter is probably the true explanation of their appearance. This is well illustrated by the occasional occurrence in Western Europe, and particularly in the British Islands, of many North American species, which could only have reached our shores in this way; it being well-known that the prevailing winds and course of storms is from North America towards Europe, and not in the opposite direction. It rarely happens that European birds are met with in eastern North America.[1]

This mention of the effect of storms on birds of passage naturally leads to the inquiry to what extent they avail themselves of favourable winds at the time of their migration; and this again leads us directly to consider how far the keepers of lighthouses and lightships are enabled, from their stationary position at excellent posts of observation, "to throw light," literally, upon this and other questions affecting the general subject.

[1] See the chapter which follows on the occasional occurrence in America of the European Woodcock.

Until the British Association appointed a Committee to take the matter in hand, the great difficulty in collecting reliable statistics on migration arose from the want of stationary observers at fixed points. The lighthouse men, from the nature of their occupation, were on the look-out night and day, and it was suggested that with a little training they might be made extremely useful. It was an excellent idea to enlist their services, and it was fortunate that the Committee appointed by the British Association to deal with the matter experienced no difficulty in securing the co-operation of the Master and Brethren of the Trinity House, the Commissioners of Northern Lights, and the Commissioners of Irish Lights. The result was that nearly two hundred stations of observation were established around the coasts of Great Britain, at which the men in charge were constantly on the look-out for migratory birds, making daily observations, and filling up printed forms supplied to them, on which they noted the time of day or night at which the birds were seen, the direction in which they were flying, the direction of the wind and the temperature, identifying the species of bird if possible by obtaining specimens, or describing their appearance as accurately as they could. The men as a rule thoroughly entered into the spirit of the thing, and it furnished a pleasant occupation. The printed forms with which they were supplied were filled up and transmitted at the end of the year to the different members of the British Association

Committee, who had undertaken to collect and report upon them. The experiment has already borne fruit. Nine Annual Reports have been published, which have been admirably summarised by Mr W. Eagle Clarke of the Royal Scottish Museum, Edinburgh, and the Committee are already in a position to draw some useful conclusions from the statistics collected—conclusions, moreover, which are being strengthened and confirmed by continued observation. The best returns (as might be expected) have been received from isolated stations, lighthouses on islands, and skerries off the coast, as well as light vessels. From lighthouses some distance inland, or surrounded by houses, few returns are received.

Amongst the general conclusions at which the Committee were enabled to arrive from the statistics collected are the following :—

On the east coasts of Scotland and England the main line of migration during the autumn takes the form of a broad stream from east to west, covering the whole of the east coast. This is the line mainly followed by the passerine birds.

Sea-fowl, as a rule, migrate some distance out at sea ; waders along the coast.

Birds have been observed to cross at all hours of the day and night, and in all weathers. They seldom fly dead to windward, except with very light breezes, and strong opposing winds retard their passage. When the wind changes during the passage, they are observed to alter their course accordingly.

The height at which birds travel is believed to depend more on the state of the weather at starting than on the direction of the wind. On clear light nights, as a rule, they travel high. In fog, rain, or snow, and in thick, murky weather they fly low, often only a few feet above the waves. On dark nights lost birds will wheel for hours round a light-ship, but with the first break in the clouds, the stars appearing, or streak of early dawn, they are on their course again to the nearest land. The comparatively low altitude at which they travel during foggy or dull weather has probably a good deal to do with the numbers which are killed at lighthouses. Broadly speaking, it is the brightest, whitest, fixed lights which best penetrate the fog or darkness, and attract most birds.

These are some of the more interesting facts which have been brought to light through the agency of the lighthouse-keepers, and we are now in a fair way, through their instrumentality, of obtaining a satisfactory solution to some of the vexed questions upon the subject of migration which I have attempted briefly—I fear somewhat imperfectly—to explain.[1]

[1] This chapter formed the substance of one of the "Davis Lectures" which I gave under the auspices of the Zoological Society at the Regents Park Gardens.

THE MIGRATION OF WOODCOCKS

To many a man the Christmas woodcock is of more importance than the Christmas turkey; three or four days' covert shooting in the last week of December is more attractive to him than all the fattened fowl in Christendom. Not that the pursuit of the one bird may not be followed by the consumption of the other, for a good day's sport usually argues comfortable country quarters and a good *cuisine;* but the idea paramount is shooting, not eating, and the fervent wish of the shooter is that the coverts may hold a good sprinkling of cock.

Whether the birds have been bred in the neighbourhood, or have "come in" from a distance, is to many persons a matter of indifference so long as they are to be found when wanted. The great charm about the Woodcock is the uncertainty of discovering his exact whereabouts, and the further uncertainty of bringing him to bag when flushed. For it is one thing to see a Woodcock and another thing to get him. It is surprising how many, who are good shots at pheasants and rabbits, will miss a Woodcock when they have the chance; and it is amusing to note how many excellent reasons are at once forthcoming to explain the failure—"The

sun was right in my eyes," or "There was a great tree in the way," or "the bird was going back right over the beaters, and so one had to shoot in a hurry," and so forth. The fact remains; the bird has been missed, and may not be seen again that day. In certain favoured districts—in the west of England and in Ireland, for example—such an event would cause but little disappointment, the supply of cocks being sufficiently good to allow of plenty of misses, and yet to provide a good bag of "longbills" at the end of the day.

In Cornwall the first flights generally arrive about the second week in October and with the wind at any point from south to east. In one year, however, a continuance of north-east winds to the end of October, with a waning moon, brought a large flight of woodcocks to the Land's End district. One gun then killed fifty-four in a week, and another thirty-nine in a day.

In Northumberland these birds have been observed to arrive in the greatest numbers in hazy weather with little wind, and that blowing from the north-east. In Norfolk it has been remarked that the nocturnal migrations of the Woodcock are influenced rather by the wind than the moon, and they have been found quite abundant on that coast after a dark night with the wind from the north or north-east. In Yorkshire and Lincolnshire some of the largest flights have been known to arrive about October 10 or 12 with a strong east wind, fog, and drizzling rain. At Spurn Point sixty have been shot in one morning after a fresh north-east

wind the previous night, with drizzling rain, and at Skegness forty-three were shot in the same day under similar conditions of wind and weather.

The Annual Reports which have been published by a Committee of the British Association, appointed to collect information in regard to the migration of birds from the keepers of the lighthouses and light-ships, furnish some curious and interesting statistics concerning the arrival of woodcocks in autumn, and establish the following facts: their migration takes place chiefly at night: birds which strike the lanterns of the lighthouses are generally picked up between midnight and daybreak: when a large number come over together, as they often do, they fly *with* the wind; but, as an exception, single birds have been seen to arrive with the wind *against* them. During the autumn migration comparatively few are observed at stations on the west coast of Scotland, while during the spring migration few are seen on the east coast, and this applies to England as well as to Scotland.

In 1882 large numbers of woodcocks arrived on the east coast of England on the night of October 12, or early morning of the 13th, with a strong easterly wind, fog, and drizzling rain. On the morning of the 13th they were reported from nine different stations, covering two hundred and fifty miles of coast line, from the Farne Islands to Orfordness. Presumably this, the great flight of the season, did not start from the same locality, but from various parts of the opposite coast of Europe—places perhaps widely apart. Both before and after

A LOST WOODCOCK.

their passage the weather had been much of the same character over the North Sea. Why they should start simultaneously on this particular evening, and how they managed to keep touch (to use a military term) during a passage of several hundred miles across a stormy sea in fog and drizzling rain, so as to arrive about the same time on our English sandhills, is one of those points in the phenomena of migration which will probably take some time and more extended observations, especially on the opposite coast line, to clear up.

It has not been demonstrated that the sexes travel apart, as is known to be the case with certain small passerine birds; but in the opinion of some persons there are two distinct races of Woodcock, one large and light-coloured, the other small and dark, which keep apart and arrive independently. Mr Clubley of Kilnsea, near the Spurn, who enjoys the reputation of having shot more cocks than anybody else on the east coast, informed Mr Cordeaux, the author of *The Birds of the Humber District*, that a south-east wind always brings large grey or light-coloured woodcocks, and a north wind small and red-coloured birds; and this rule is said to apply to other parts of the east coast.[1]

Mr Stevenson, in his account of the Birds of Norfolk, has published some interesting details of woodcock-shooting in that county, mentioning some notable bags which have been made in certain favoured coverts, and I have already

[1] Fifth Report, 1887, p. 51, note.

referred above to the sport which these birds sometimes afford in Cornwall and the Scilly Islands. But, of all places in the British Islands for this kind of shooting, none are comparable to certain localities in the west and south-west of Ireland. Sligo and Mayo are noted counties for Woodcock. In Mayo 10 to 30 couple is a fair

A WOODCOCK'S NEST.

day's sport for a party of six guns, but 40 couple have been killed in a day in one of Lord Sligo's woods. At Lissadel, in the Co. Sligo, 150 couple were killed in three days by a party of eight guns, and at the same place on another occasion 338 cocks were bagged in six days by seven guns. In

the Co. Kerry, the year Lord Elcho resided at Muckross, Killarney, the party, averaging five guns, shot in ten days 840 cocks, and during that winter (1863-1864) 1250 were killed on the estate. On Lord Ardilaun's estate at Ashford, Co. Galway, the woodcock-shooting is famous. Here, on a day in January, five guns bagged 106 birds; and six guns 350 cock in a week. On the two best days of this week there were killed respectively 117 and 115 birds. In January 1880 six guns killed 365 cock in four days, killing on one day 165, and on another 82 birds. According to Sir R. Payne Gallwey, from whose excellent work, *The Fowler in Ireland*, these figures are quoted, "from three to four hundred cock is a good yearly average on a favoured estate in Ireland; but in exceptionally good seasons this number may be nearly doubled."

It is generally supposed that woodcocks on their arrival here are lean and out of condition. Lieut.-Colonel Cuppage, in *The Field* of 6th April 1872, reported having seen a flight of about 100 woodcocks arriving on the north coast of Ireland in an exhausted state. He caught several and found them to be in such poor condition that he released them. But this is not always so. Sir. R. Payne Gallwey states that, out of hundreds which he examined during the exceptionally long and severe winter of 1880-1881, only a dozen were small and poor birds, and at the end of the frost he picked out three birds, each of which weighed exactly 16 oz., a fourth weighing 18¼ oz. These must have

been exceptionally fine birds, for the average weight of a Woodcock may be set down at 12 oz. or thereabouts. Of such phenomenal weights as those of 24 oz. and 27 oz. mentioned by Yarrell as appertaining to woodcocks shot in Norfolk and Suffolk, it may be remarked (as has been said of many great and good men before now) we shall probably "never look upon their like again."

It is often asserted that the sexes of the Woodcock may be distinguished by the appearance of the first primary feather in the wing, in which, it is said, the outer web is of a uniform colour in the female, and has white or buffy-white zigzag markings on a darker ground in the male bird. This, however, is a fallacy. The variation is not indicative of sex but of age, the young birds having the outer web of this feather variegated, the old ones plain. In point of fact the sexes are externally indistinguishable.

THE EUROPEAN WOODCOCK IN AMERICA

THE question is sometimes asked whether the European Woodcock occurs in America, and the answer to be given to such question is that the appearance of our Woodcock on the other side of the Atlantic is of such very rare occurrence that the instances which have been recorded may be counted on one's fingers.

I have been at some pains to search for such records, and a summary of them will be, I think, of interest to naturalists and sportsmen. It may be observed, *en passant*, that the Färoe Islands lie beyond the western limit of the ordinary range of this bird, and, so far as I am aware, it has only once been met with there. This was on the island of Naalsoe on November 15, 1852 (see Müller, *Færoernes Fuglefauna*, p. 26; and Feilden, *Birds of the Faröe Islands*, *Zoologist*, 1872). In the British Islands the extreme western limit of its range is probably Achill Island, off the coast of Mayo.

The earliest report which I have been able to find of the appearance and capture of a European Woodcock in America is in *The Ibis* for 1862, where (at p. 284) in a notice of the stuffed birds which

were on view in the International Exhibition of 1862, mention is made of a photograph of one (too much injured to admit of preservation), which was shot at an open spring near St John's, Newfoundland, on January 9, 1862, after long continued easterly winds. It was stated in a notice affixed to the frame that, although the ground had been covered with snow for many weeks, the bird was in good condition and weighed 12¾ oz., or a trifle more than the average weight of British killed examples.

In a "Catalogue of Birds observed on New York, Long and Staten Islands and the adjacent parts of New Jersey," published in *The Annals of the Lyceum of Natural History of New York* (vol. viii., April, 1866), by the late Mr G. N. Lawrence, a well-known American ornithologist, that writer makes the following observation on the European Woodcock:—

"I have had an example of this species for some years, which was sent me by Mr William Galbraith, accompanied with this note dated December 6, 1859. 'A poultry dealer in Washington Market informed me that he had seen in the market a strange bird, which in his opinion was an overgrown Woodcock. I went to see it, and found it to be a true European Woodcock. It was badly shot, part of the bill and skull being carried away, but fresh and otherwise in good order. The person I got it from said that he bought it with a lot of quail on board the Shrewsbury boat.' Doubtless" (writes Mr Lawrence), "it was killed near Shrewsbury, New Jersey, and apparently with coarse shot. It was,

the Co. Kerry, the year Lord Elcho resided at Muckross, Killarney, the party, averaging five guns, shot in ten days 840 cocks, and during that winter (1863-1864) 1250 were killed on the estate. On Lord Ardilaun's estate at Ashford, Co. Galway, the woodcock-shooting is famous. Here, on a day in January, five guns bagged 106 birds; and six guns 350 cock in a week. On the two best days of this week there were killed respectively 117 and 115 birds. In January 1880 six guns killed 365 cock in four days, killing on one day 165, and on another 82 birds. According to Sir R. Payne Gallwey, from whose excellent work, *The Fowler in Ireland*, these figures are quoted, "from three to four hundred cock is a good yearly average on a favoured estate in Ireland; but in exceptionally good seasons this number may be nearly doubled."

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was $7\frac{1}{2}$ oz., the average weight of that bird being, in his experience, about $5\frac{1}{2}$ oz. He considered the weight alone sufficient to determine the species, but added that "the character of the wing settled the matter beyond dispute." Dr Elliott Coues added that, so far as he could remember, there had hitherto been no recorded instance of the occurrence of the European Woodcock south of New Jersey.

Since the publication of the last-named record, a European Woodcock has been reported to have been shot in Michigan,[1] one of the northern States lying between Lakes Michigan, Huron, and Erie; but Virginia still remains the southernmost State in which, so far as we know, this bird has been actually obtained. In these circumstances, it was with no little surprise that I received a letter signed by the captain, chief engineer, second officer, and chief steward of a steamer lying in the Strait of Magellan, certifying that a European Woodcock had been shot in Isthmus Bay in October 1895. The letter ran as follows:—

"SS. 'Gulf of Papua,' Isthmus Bay,
"Smythe's Channel, Straits of Magellan,
"*October* 6, 1895.

"This is to certify that inclosed skin of woodcock was shot in Isthmus Bay, long. 73° 37′ W., lat. 52° 10′ S., on the above date, and eaten by Captain Thomas H. Cook; shot by chief engineer, Forster Hardy; seen by second officer, W. Lane, R.N.R.; seen by chief steward, George Addis.

[1] *Bull. Nuttall, Orn. Club*, vol. ii., p. 75.

This is to clear a doubt as to this bird being seen so far south, as expressed in correspondence in the *Field* some considerable time ago, the signatures of those mentioned being appended."

It was with no little curiosity that I opened the packet which accompanied this letter, and found, as I had expected, that the bird sent was not the European Woodcock, for which it had been mistaken, but one of the large South American snipes (*Gallinago Jamesoni*), which, from its size, robust form, and general colouration, might well be confounded with our better-known species. The incident shows how important it is in cases of this kind to forward the skin of the bird for identification. Had no specimen accompanied this letter, the solemn declaration made by four conscientious eye-witnesses might have carried conviction to the minds of many that a European Woodcock had been actually shot at the southern extremity of South America. As it is, the chief interest of the occurrence lies in the fact that the acquisition of this particular specimen extends the limit of the southward range of this large snipe somewhat further than was previously known, as may be seen on reference to the descriptions and figures in Messrs Sclater and Salvin's *Exotic Ornithology*, 1867, and to the fuller account of the South American *Scolopacidæ* given by the late Mr Henry Seebohm in his monograph of this group of birds. The specimen in question has been presented to the British Museum, where, on account of the

locality where it was procured, it proves to be an acceptable addition to the national collection.

The thanks of naturalists are due to Captain T. H. Cook and his officers for having taken the trouble to preserve and forward a bird which, in their effort "to clear up a doubt," has established a fact of geographical distribution that is worth noting.

There was some excuse for mistaking Jameson's Snipe for a Woodcock, since there are several points of resemblance, while in size there is but little difference. The wings of both have short primaries and long secondaries, and the legs are feathered to the tarso-tibial joint, as in the typical Woodcocks (see p. 299). On the other hand, in Jameson's Snipe the head is streaked longitudinally instead of transversely. So that while it is not a true Woodcock it is not quite a typical Snipe.

It was originally discovered by William Jameson near Quito in Ecuador, and has since been found on the southern slope of Chimborazo, and on the eastern slope of the Andes in Bolivia; but is still one of the rarest birds in collections.

WHITE AND PIED WOODCOCKS

VARIETIES of the Woodcock with more or less white about them, or in other words with feathers in which (probably from injury by shot) there has been a failure in the secretion of the colouring pigment, are not very uncommon. Indeed, hardly a shooting season comes round in which we do not see a few and hear of others. On November 13, 1897, a pied bird of this description was shot near St Keverne, Cornwall, and was forwarded for preservation to Messrs Rowland Ward & Co., who were good enough to send it for my inspection. In this example three flight feathers in the left wing were pure white, and there were also several white feathers in the wing-coverts. The rest of the plumage was of the normal colour. The bird, an old one, was in good condition and weighed 12½ oz. The correspondent who communicated the circumstance of its having been shot remarked in his letter that he would be glad to know whether anyone had ever met with a similar freak; for although he had handled, as he said, a large number of Woodcocks, and had seen two cream-coloured specimens, he had never before seen a pied one.

On October 26, 1897, a pure white Woodcock was killed on the Pitcroy shootings, Strathspey, belonging to Mr C. Pelham Burn, and, as a great

curiosity, was sent to an Edinburgh bird-stuffer for preservation. My informant wrote: "It would interest me and several of my friends very much if you would kindly tell me in what books or papers I could find mention of other white Woodcocks being killed or seen."

If a careful search were made through back numbers of the *Field*, the *Zoologist*, and other journals devoted to such subjects, there is no doubt that a number of records of white Woodcocks might be brought to light. The same remark will apply to such books as relate to county ornithology. It will suffice to quote the following instances, of which I have notes at hand :—

Bewick states that a white Woodcock was seen for three successive winters in Penrice Wood, near Penrice Castle, in Glamorganshire; it was repeatedly flushed and shot at during that time, in the very same place where it was first discovered; at last it was found dead with several others which had perished by the severity of the weather in the winter of 1793. This account, subsequently copied by Montagu in his *Ornithological Dictionary*, was communicated to Bewick by Sir John Trevelyan, Bart., on the authority of the Rev. Dr Hunt, and proves not only the existence of a white Woodcock, but also the truth of the assertion, that these birds return to the same haunts year by year.

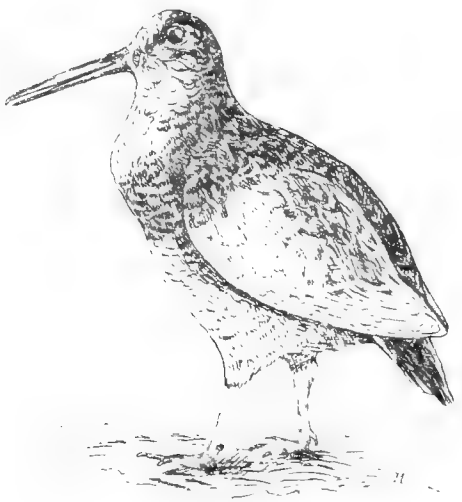
The late Mr G. Dawson Rowley many years ago showed me an oil painting of a white Woodcock, with the following inscription: "This very remarkable Woodcock was shot by the Earl of

Gainsborough, November 7, 1748, and painted from the bird itself by S. Goodwin, of Oakham." Presumably it was killed in the coverts at Exton Park, near Oakham.

Daniel, in his *Rural Sports* (vol. iii., pp. 167, 168), mentions several instances of white Woodcocks that had come under his observation. Amongst others, he notices one "completely white," that was shot by a keeper of Sir John Lade's at Salehurst, in Sussex; a second with both wings white, killed the same year at Box, in Somersetshire; and a third, "milk-white," killed by Mr Ludlow's gamekeeper near Westbury, Wilts. In 1833 a Woodcock with white feathers in the wings was observed in a covert at Monkleigh, near Torrington, Devon. The same bird, or one of precisely similar plumage, reappeared in the same place for four consecutive seasons, and was so often shot at and missed, that it became known to people in the neighbourhood as "the witch." In 1837, however, it was at length shot at Portledge on the property of the Rev. J. T. Pine Coffin, who had it preserved. The late Mr Henry Stevenson, in the second volume of his *Birds of Norfolk* (p. 295), says :—

"The most beautiful specimen of the Woodcock I ever saw was killed at Hanworth, near Aylsham, on November 6, 1856. Like one described by Mr Edward Newman in *The Zoologist* for 1855 (p. 4631), all the markings peculiar to the Woodcock in its usual plumage were in this bird more or less faintly indicated by the most delicate buff, or fawn tint, on

a ground of white, whilst those parts which in the normal colouring of the species are deepest, were here also most plainly discernible. The whole of the under parts were white, yet still showing the usual bars when closely examined, resembling the faintest water-markings, visible only in the strongest light. On November 16, 1864, a curiously



A PIED WOODCOCK.

pied bird, now in the possession of Lord Hastings, was shot at Melton Constable. In this specimen all the primaries of one wing, except the fourth, and the wing-coverts, were pure white; and in the other wing the three first primaries and one or two feathers in the coverts, the rest of the plumage being of the usual tint. On March 17, 1859, a Woodcock was also killed near Lowestoft, in

Suffolk, having the back and wings thickly sprinkled with white feathers, as were also the sides of the neck and the under parts generally."

Mr Stevenson likewise reported (*Zoologist*, 1873, p. 3712) that in April 1873 a pure white Woodcock was seen at Corton. A Woodcock with white wings was shot some years ago near Edenhall, where it is still preserved (*Birds of Cumberland*, p. 145); and a piebald one was obtained at Lowestoft Manor in 1859 (*Birds of Suffolk*, p. 146).

On January 1, 1874, a pure white Woodcock was shot near Tallow, Co. Waterford, and was sent to Dublin for preservation by Mr Williams, of Dame Street.

Messrs D'Urban and Mathew in their *Birds of Devon* (p. 319) state that white and cream-coloured varieties have been obtained in that county, and are not very rare. Montagu had a cream-coloured specimen presented to him by Mr Bulteel, of Flete; another was purchased in the Exeter Market by Mr Comyns, who had also a white variety shot by the Hon. Newton Fellowes at Exmouth. One with white feathers in the wings was shot on the manor of Monkleigh, near Tiverton, having frequented the same spot for four years. A similar specimen occurred in North Devon in October 1889. Mr T. Clode shot a buff-coloured Woodcock at Waitchcombe, near Honiton, which was preserved by Mr Anning, bird-stuffer, Honiton, for Mr W. Baines, who was at the time residing at Shute Park. A buff-coloured one, with white wings, occurred in North Devon, and a white one was shot

at Portledge that had been seen in the coverts *for several seasons in succession*. Mr John Gatcombe described a very pretty variety which was sent into Plymouth from Cornwall. It had a pure white patch on the top of its head, a ring round the neck taking in part of the chest, and white wing-coverts, the bases of the primaries being also tinged with the same; the other parts were of the usual colour, or, perhaps, a shade lighter, the whole plumage strongly reminding him, as he said, of that of the Snow Bunting in winter.

Mr J. Whitaker, of Rainworth Lodge, near Mansfield, has in his collection some curious varieties of the Woodcock. One of these is white, with patches of black on the head, back, and tail, and with faint longitudinal streaks on the primaries and secondaries. This bird was shot in Ireland, near Londonderry, in 1880. One of the latest instances noted occurred at Fishley, Norfolk, where, on January 29, 1895, a white Woodcock was shot by Mr Read. Finally, I may mention "a melanite form," so described by Babington in his *Birds of Suffolk*, which was shot near Ousden Hall, in that county, on November 2, 1884, and a black variety shot at Cromer, as recorded in the *Field* of November 13, 1869.

Thus it would appear that white and pied Woodcocks, and even black or very dark varieties like the so-called Sabine's Snipe, have been met with at irregular intervals in various parts of the country, and further search would doubtless bring to light many more instances than those above cited.

SNIPE AND THEIR DISTINCTIONS

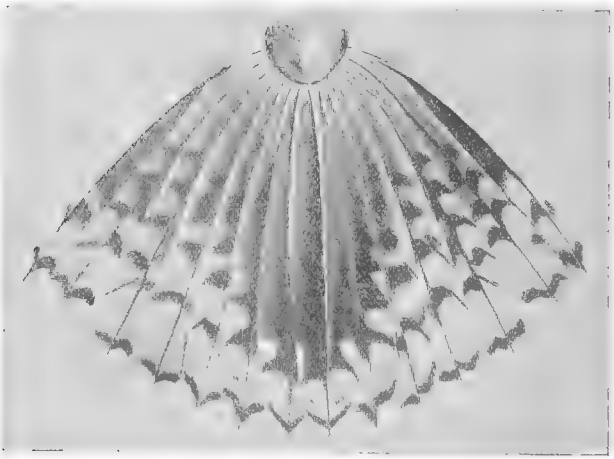
In many parts of the world where, from the nature of the country, game is not to be found in any quantity, sportsmen would fare badly if it were not for Snipe. Few birds are more widely distributed over the surface of the globe, and when found in their proper haunts and at the right season of the year, having regard to their migratory habits, no birds afford better sport with the gun. Almost every country has its own peculiar species, bearing, it is true, a general resemblance in colour and markings to the European snipe, with which the generality of sportsmen are familiar, yet differing from that bird in certain respects which have only to be pointed out to be at once recognised. The general family likeness, indeed, is so great that even those who have shot hundreds of Snipe in India, Ceylon, South Africa, and North and South America seldom recognise the fact that they are distinct from those which are to be met with on English marshes, or in Irish bogs. The reason for this general resemblance is obvious. The colouration of these birds is protective. The dark body colour crossed with pale buff lines, which harmonise so well with the peaty soil and the withered grass stems amongst which these birds live, favours their concealment in the most effective manner; so much

so that it is extremely difficult to see a Snipe upon the ground, as every experienced snipe-shooter knows who has walked up to his dog's point and tried to discover the bird sitting. It is a wonderful provision of nature, this protective colouration, to ensure the preservation of the species. Few facts in natural history are more striking than such harmony of colour with natural surroundings.

The distinction between English and foreign Snipe is not merely a difference of size, as many persons appear to think. Nothing is commoner than to read of the Australian Snipe that it is exactly like the English bird, only bigger. The officer on leave in South Africa will affirm that the Black-quilled Snipe of Natal is precisely similar to the bird he has shot in Norfolk, only darker ; while the sportsman who has killed a few of the large snipe of South America will insist on calling them "Woodcock." It is important, therefore, at the outset to recognise the difference between a Snipe and a Woodcock, since this will enable us to separate them at once into two well-marked groups. In the Snipe the head is streaked or barred longitudinally, in the Woodcock transversely ; in the former bird the flight feathers are plain, in the latter variegated. In the Snipe also the leg is bare above the tarso-tibial joint (popularly, though wrongly, termed the knee), while in the Woodcock it is feathered to that joint. Of the twenty or more distinct species of Snipe known to naturalists three only are found in the British

Islands, the remainder being natives of Siberia, China, India, Ceylon, the Malay Archipelago, Australia, New Zealand, Africa, Madagascar, North and South America.

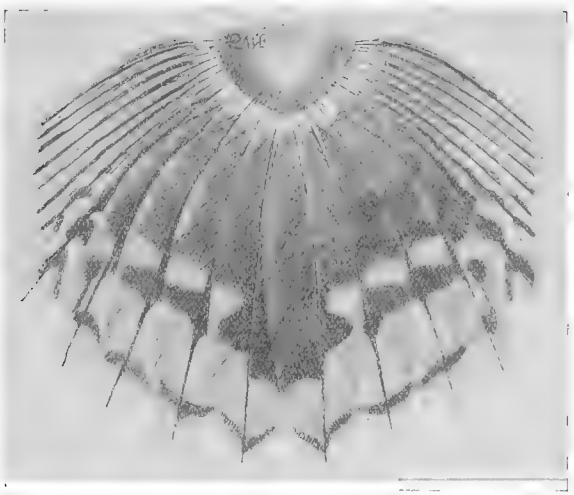
The so-called Common or Full Snipe (Fig. 1), so much sought for by English sportsmen, has a wide geographical range. It is found throughout Europe



TAIL FEATHERS OF THE COMMON SNIPE.

(including Iceland and the Faröes) and Northern Asia up to about lat. 70°, and migrates southward in winter to North Africa, India, and the Malay countries. In India, China, and the Malay Archipelago its place is more or less usurped by two species of so-called Pintail Snipe (*Gallinago stenura* and *G. megala*), characterised by possessing respectively twenty-six and twenty tail feathers (instead of fourteen), and having the outside ones

(eight and six on each side respectively) so attenuated as to consist of little more than pin-like shafts (Fig. 2). In South Africa, Cape Colony, and Natal the English snipe does not occur, its place being supplied by a larger and darker species (*Gallinago nigripennis*); while in Madagascar and Mauritius is found a remarkably long-billed and

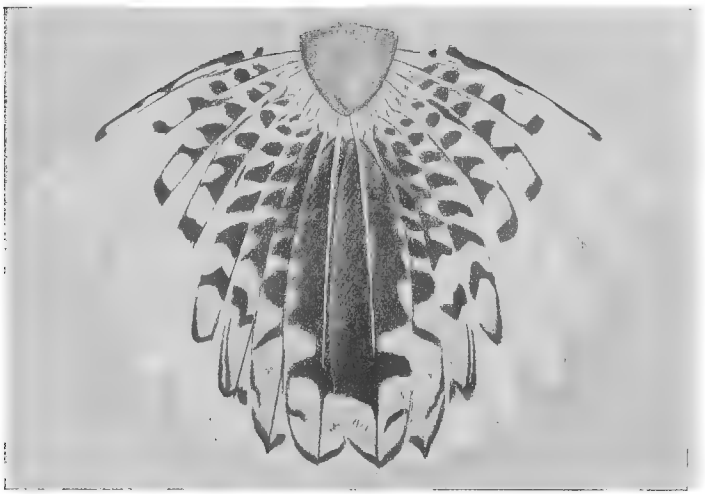


TAIL FEATHERS OF THE PINTAIL SNIPE.

long-toed Snipe (*Gallinago macrodactyla*), in which the bill measures as much as $3\frac{1}{2}$ in. and the toes are unusually long.

The Common Snipe of North America (*Gallinago wilsonii*) is so like our English bird as to be scarcely distinguishable from it, except, it is said, by the possession of sixteen instead of fourteen tail feathers, though it is doubtful whether this alleged peculiarity is constant, or independent of moult.

In South America there are several species of snipe, some of which (as *G. frenata* and *G. paraguayæ*) so closely resemble our own bird and Wilson's Snipe in colour and size, that to the majority of shooters they appear indistinguishable; while others (as *Gallinago imperialis*, *jamesoni*, *stricklandi*, *undulata*, and *gigantea*) are so conspicuous by



TAIL FEATHERS OF THE GREAT SNIPE.

their larger size and varying plumage as at once to attract attention.

The largest known Snipe is *Gallinago gigantea*, a native of Brazil and Paraguay. It is about double the size of our bird, being 19 in. in length (instead of 10 in.), with a bill of 5 in. instead of 2.8 in., wing 6.6 in. instead of 5.3 in., and leg 2.25 in. instead of 1.3 in.

In Australia there is a large Snipe (*Gallinago australis*) measuring 11½ in., with a wing nearly 1½ in. longer than in our bird, and having eighteen instead of fourteen tail feathers, the two outermost ones in their attenuation resembling in character those of the Pintail Snipe. This bird is double the weight

TAIL FEATHERS OF THE JACK SNIPE.

of ours, in that respect coming nearer to the European Great or Solitary Snipe.

In many parts of the world certain Sandpipers are commonly called "Snipe," sometimes with a distinguishing prefix, such as "Bay Snipe," "Pool Snipe," etc. The so-called "Jack Snipe" of American sportsmen is the Pectoral Sandpiper (*Tringa maculata*), while in this country we are accustomed to hear reports of Jack Snipe breeding on the

moors in summer, which on inquiry turn out to be Dunling (*Tringa alpina*). Thus it is that the long bill, long legs, and sharp-pointed wings are considered as indicating affinity to the Snipes in the great family *Scolopacidæ*, while the true Snipes may be always recognised by the peculiar colouration of the dorsal region, as well as by the delicately sentient bill. This is not only long, slender, and flexible, but also enlarged towards the extremity, and has numerons nervous filaments under the cuticle which, on becoming dry, cause it to look curiously pitted. This peculiarly-formed bill is especially suited to enable the owner of it to feel and seize its food beneath the surface when unable to see it, a remarkable adaptation of structure to habit.

Not a bad way of identifying the different species of Snipe is to examine and compare their tail feathers. It will be seen from the few examples here selected for illustration that there is considerable variation not only in the pattern, but also in the shape and number of the tail feathers. I have made choice of four species which are most easily obtainable, in order that my readers may be able to secure specimens and examine for themselves. It may be new to some people to find such a difference in shape in the tail feathers of the Jack Snipe as compared with those of the common species, while those who have never handled an example of the Pintail Snipe will see at a glance what an excellent distinguishing feature is afforded in the case of species which in other respects are very similar.

TWENTY YEARS' SNIPE-SHOOTING

In 1899, at the Knickerbocker Press in New York, there was printed a remarkable book with the above title. As it was printed for private circulation only, and no copies apparently were sent out for review, it has escaped the notice of critics, and is probably known to few readers beyond the immediate circle of the writer's own friends amongst whom the book was distributed.

It is a volume of some 300 pages, consisting of extracts from the journals of the late Mr J. J. Pringle, a noted American snipe-shooter, and is illustrated with twenty-four photographs. The scene is laid at Oaklawn, Bayou Teche, in south-west Louisiana, where for twenty seasons Mr Pringle enjoyed some of the finest snipe-shooting in the world. It is generally believed that the largest bags of snipe made by a single gun have been obtained in India, Ceylon, and Egypt, and the remarkable bags made in Ireland by Colonel John Peyton, as recorded by Sir R. Payne Gallwey in his *Fowler in Ireland*, should not be overlooked; but all these are put completely in the shade by the results obtained in Louisiana by Mr Pringle between the years 1867-1887, when the country over which he sported was a perfect paradise for

the snipe-shooter. The ground over which he shot is thus described :—

"A few miles from Berwick's Bay there enters from the west the Bayou Teche, loveliest of southern streams, navigable for more than 100 miles, preserving at all seasons an equal depth and breadth ; so gentle in its flow that it might be taken for a canal, did not the charming and graceful curves by which it separates the undulating prairies of Attakapas from the alluvium of the Atchafalaga, mark it as a work of nature. The Teche waters the parishes of St Mary, New Iberia, St Martin, Lafayette, and St Landry—the Attakapas home of the Acadians."

Such was the condition of the country as Mr Pringle found it in 1867, and as it continued for the first fifteen or sixteen years of his shooting. It was, however, quite changed in later years by the extension of the New Orleans and Opelousas Railway, now called the Southern Pacific, from Berwick's Bay, its then terminus, to Franklin, eight miles from his shooting-box (which he called "The Snipery"), and afterwards to San Francisco. Then the prairies and marshes, which previously had been grazed over by herds of cattle, affording excellent feeding-ground for snipe, were gradually fenced, drained, and tilled, and the snipe-grounds over which he used to shoot were gradually curtailed, and eventually entirely destroyed.

His favourite ground consisted of low-lying marshes, with a growth of green aquatic weed, which he called "blue iris," bearing a beautiful blue

flower in spring, and other water weeds and grasses affording excellent cover for the birds. Adjacent to these low marshes, which he called the lower grounds, about 15 in. to 30 in. above their level, sloping down to them, with a gradual and almost imperceptible descent, was a low undulating prairie, which he called the upper grounds, in the depressions of which also grew the "blue iris" and various water grasses. The birds were generally found on the lower grounds in dry weather, or when there had not been rain enough to submerge them; but in wet weather, when these lower marshes were too much flooded, they resorted to the upper grounds.

The walking, as snipe-shooting goes, was uncommonly good, so that one could get over the ground at a good pace, which in a measure accounts for the large bags that were made, although, of course, the good shooting must be taken into account.

When snipe were abundant Mr Pringle kept his dog—either setter or pointer—at heel, and only used him to "seek dead," not to retrieve; for a dog sent out to retrieve would have put up many birds which would have gone off, some of them unshot at. So that by walking to the dead birds and picking them up himself he got many more shots. This, of course, gave more walking, but more shooting. He had an old negro slave who was a wonderful marker, and it was his business when birds were rising fast and the shooting was rapid, to mark down and keep count of the dead

birds, and then report the number down. Standing quite still and indicating the spots one after another, his master would walk to the dead birds and pick them up. When snipe were numerous he would sometimes have ten or a dozen down at the same time, and by pursuing this plan in going from one to another, by the time he had gathered these he would perhaps kill several more, the majority of which would have escaped unshot at if he had sent a man or dog for them.

Mr Pringle's *modus operandi* is so instructive to snipe-shooters that it deserves to be quoted *in extenso*.

"On reaching the ground and getting out of the waggon, I would station it on a ridge, with orders to keep within signalling distance, and when I required more cartridges, or my men had as many birds as they could well carry, I would signal, and it would come to me as fast as possible. When birds were abundant I never allowed the dog to range, for a snipe is a very wild bird, with but little scent, and a dog, however good and careful, would flush out of distance many more birds than he would point."

"When practicable I shot *down wind*, with a marker or beater walking abreast of me about 15 yards off; with two beaters, one on each side of me, I would have the waggon meet me to leeward, and when I got to the end of the beat I would drive over the ground I had just beaten, so as not to disturb the rest of it, and take another parallel beat *down wind*, and so on until I had shot all that

ground out. Oftener, however, I would begin on the weather side of the ground, and beat *across wind.* My beaters, if I had more than one, were then both to leeward of me, the one next to me about 15 yards off and somewhat behind me, the other the same distance from the first and a little behind him. So, as snipe on rising generally fly to *windward,* I got shots at the birds rising, not only before me, but before my beaters. This would give me longer shots, but more of them. In shooting *up wind*—which, from the lay of the ground, I sometimes found it convenient to do—my marker would walk on a parallel line with me, about 15 yards off and well behind—the wilder the birds the farther behind ; with two beaters, one on each side of me, I walked well ahead. Indeed, I reduced the shooting of these grounds to a system (to which to a certain extent was due my large bags), so as to get each day as many birds as possible in as short a time as possible."

What these bags were like may be seen from the following extracts from the journal which was carefully posted up each day on return from shooting; the season commencing on November 1, and ending about the middle of March.

The best six consecutive shooting days, with a rest between, were experienced in November 1874. Thus: November 19, 207 ; November 21, 214 ; November 23, 228 ; November 25, 301 ; November 27, 208 ; November 30, 256 ; total for the six days, 1414. In seven days in December 1887 the bags were 270, 255, 366, 271, 286, 233, and 262; total 1943.

Over 300 a day were killed on three occasions, making 972 in the three days. Over 200 a day were killed on twenty-six days, making in all 6378, and 100 and upwards were bagged on 285 days, giving a total of 40,367 snipe. During the twenty seasons' snipe-shooting, from 1867 to 1887, the following extraordinary result was obtained:—

Season.	Shooting Days.	Snipe.	Season.	Shooting Days.	Snipe.
1867-68	24	1861	1878-79	29	3085
1868-69	38	3645	1879-80	31	2434
1869-70	40	4091	1880-81	47	3493
1870-71	30	3412	1881-82	39	3238
1871-72	37	4142	1882-83	41	2521
1872-73	23	2006	1883-84	49	3734
1873-74	32	3100	1884-85	27	2403
1874-75	42	6615	1885-86	48	3744
1875-76	42	5048	1886-87	26	2085
1876-77	28	3116			
1877-78	38	5314	20 seasons	711 days	69,087 snipe

It only remains to add a few of Mr Pringle's remarks on the guns used, powder and shot.

"For a few seasons I shot with guns of Lang, Purdey, and Grant; afterwards altogether with Purdey's hammer cylinder; then (when they came in) with hammerless choked—the perfection of guns in my opinion—they shot so hard, wore so well, and handled so beautifully as to leave nothing to be desired, weighing 6 lb. 10 oz. As to shot, No. 9 chilled shot was used, sometimes No. 8 for the left barrel; I stuck to black powder for a long time, for I always had a feeling that it shot stronger. Eventually, however, I used Schultz, though to the end I occasionally used black for the second barrel.

I shot with only one gun at a time, and had no loader. From much practice I became very expert and quick in loading. Keeping the cartridges loose in an open pocket, I could slip them in with great rapidity."

Though much exposed to wet and cold, this intrepid sportsman was never prevented from shooting by ailment of any kind, except once, in the season of 1878-1879, when he had a severe attack of rheumatic gout, complicated with malaria, but that did not prevent his killing that season 3085 snipe in twenty-nine days.

Mr Pringle's journal is a remarkable one, and snipe-shooters into whose hands it may chance to fall will do well to peruse it, and profit by the writer's experience, though they can never hope to meet with his success.

CRANES AT CHRISTMAS

AMONGST the many good things with which our forefathers were wont to stock their larders at Christmas time were Cranes, and reference to some of the "household books" of the Middle Ages shows that, although these birds were generally regarded as delicacies, there was no apparent difficulty in procuring them in England for those who were able to pay for them. Thus, in the *Northumberland Household Book*, for example (1512), we find the steward's entry, "It is thought that cranys must be hadde at Crystynmas and other principall feestes for my lordes owne mees, so they be boght at xvjd. a pece," a sum in those days equivalent, perhaps, to half as many shillings of our money. Indeed, at one time, if we are to credit the old chroniclers, Cranes were common enough in England to afford abundant sport to falconers, fowlers, and shooters with the cross-bow, by each and all of whom, if masters of their craft, they were easily taken. It is chiefly to the scattered records of such sport, and to the entries of payments made by the stewards of great and noble households, that the naturalist must turn who would collect materials for a history of the Crane in England.

Perhaps one of the earliest notices of the Crane

as a British bird, is that which carries us back to Saxon times, and occurs in a letter addressed by King Ethelbert to Boniface, Archbishop of Mayence, who died in 755. In this letter, a copy of which has been preserved, the king asked him to send over two falcons that would do to fly at the Crane; for, said he, "there are very few birds of use for this flight in this country"—that is, in Kent. In other words, there were Cranes enough in Kent in those days to afford sport to a falconer, but no hawks powerful enough to take them. He wanted Jerfalcons.

It is related of William the Conqueror, who was a great gourmand in his way, that on one occasion, when at dinner, William Fitz-Osborne, who, as dapifer, or steward of the household, had the charge of the curey, served him with the flesh of a Crane scarcely half roasted. The king was so vexed, that he raised his fist and would have struck him, had not Eudo, who was appointed dapifer immediately afterwards warded off the blow.[1]

In the twelfth century Cranes were reported to be very common in Ireland. Giraldus Cambrensis, who travelled there in 1183, and again in 1185-1186, in company with Prince John, noted in his journal (*Topographia Hibernica*, ed. Dimock, M.R. series, p. 46) that they were so numerous, that as many as a hundred or thereabouts might often be seen in one flock. This is also recorded by Ranulphus

[1] *Pegge's Form of Curey: a Roll of Ancient English Cookery.* 1780. See also Warner's *Antiquitates Culinariæ;* or, *Curious Tracts relating to the Culinary Affairs of the old English*, 4to. 1791.

Higden (who died about 1360) in his *Polychronicon*, and by his translator, John of Trevisa, who lived A.D. 1357-1387.[1]

King John was very fond of hawking, and it is recorded of him that he used to have great sport flying at Cranes with Jerfalcons, which he received from Philip, King of Norway. He used to hawk in Dorsetshire, Somersetshire, Lincolnshire, and Cambridgeshire, as appears by entries in the court rolls of the expenses of the journeys. On one occasion, at Ashwell, in Cambridgeshire, in December 1212, he killed seven Cranes with his hawks, at which he was so pleased, that for every Crane he feasted fifty paupers, and gave each of them a penny. On another occasion, in Lincolnshire, he took no less than nine Cranes with his Jerfalcons, and, in the joy of his heart, regaled the poor in the neighbourhood with bread, meat, and ale.

Nor are these exceptional instances. Edward I., in 1276, received some Jerfalcons from the King of Norway, which were trained to fly at Cranes and Herons; and in the Wardrobe Accounts of that monarch, under date January 5, 1298, occurs the entry of a payment to Alexander Coo, the king's falconer, for presenting to the king three Cranes taken in Cambridgeshire by the Jerfalcons of Sir Geoffrey de Hautville.

Leland, in his *Collectanea*, has printed, from an old paper roll, the bill of fare at a great feast which

[1] See Higden's, *Polychronicon*, ed. Babington, M. R. series, vol. i., pp. 334, 335.

was given at the enthronisation of Archbishop Nevill in Edward IV.'s time. From this it appears that, amongst the various wildfowl then served up, there were no less than 204 Cranes.

Fosbrooke tells us, in his *Encyclopædia of Antiquities* (vol. ii. p. 1014), that it was a custom in the Middle Ages to keep tame Cranes, which stood before the table at dinner, and even kneeled and bowed the head when a bishop gave the benediction! Whether it is possible they could have been made so tractable as this, we will not pretend to say: but there seems to be no doubt that they were kept in courtyards and about the houses formerly, just as peafowl are kept at the present day. Occasionally they may be found mentioned in old inventories of live stock, taken on the death of their owners. Thus, in an inventory of Mr Serjeant Keble's goods, dated July 6, 1500, after an enumeration of his cattle, sheep, and horses, we find three swans valued at 10s., two geese at 3s. 4d., and three cranes at 5s.

This would seem to be a liberal valuation, if we may judge by the price paid in October 1502, when as appears from *The Wardrobe Accounts of Elizabeth of York* (daughter of Edward IV. and consort of Henry VII.), the sum paid to a servant of Sir John Longes for a Crane was xijd. But perhaps this was only a *douceur*, and did not represent the market value of the bird, which seems to have varied considerably. Thus in the *Household Book of the l'Estranges of Hunstanton* (A.D. 1519-1578) occur the items :—

"1519. Itm. pd. for a crane and vj plovs, xxd.

"1526. The xxxixth weke. Itm. iiij malards and a crane kylled wt. the crossbowe.

"1533. The xxvjth weke. Thursdaye. Itm. a crane, vjd.

"1533. The xxxviijth weke. Tewysdaye. Itm. a crane kylled wt. the gun."

In the *Northumberland Household Book* (1512), already quoted, the price of a Crane is set down at "xvjd. a pece." At a feast, given in the Inner Temple Hall, on the 16th of October 1555, the price given for a Crane was the same as for a Swan and Bustard—namely xs., pheasants and turkeys being charged at iiijs. each; while in the Lord North's "accounts" (1577), one Crane is charged at xiijs. iiijd., a Heron at the same period being only valued at iijs.

Before this time, however, it would seem that Cranes were getting scarce in England, and in 1534 it had become necessary to pass an Act, quaintly entituled "An Act to avoide Distruction of Wilde Fowle," whereby it was made illegal, between the first day of March and the last day of June, to take or destroy the eggs of any wildfowl on pain of imprisonment for a year, and a forfeit for every egg of a Crane or Bustard twenty pence, for every egg of a Bittern, Heron, or Shovelard (*i.e.*, Spoonbill) eightpence, and for every egg of a Mallard, Teal, or other wildfowl a penny, half the penalty going to the king, and the other half to the informer.

The breeding haunts of the Crane in England were chiefly, if not exclusively, in the fens of the

eastern counties ; and for some time after the passing of the Wildfowl Act of 1534 these birds seemed to have held their ground in East Anglia. Turner, in his *Historia Avium*, printed in 1548, tells us that he himself had often seen the young ones, presumably in the fens near Cambridge, where, as we learn from Cooper's *Athenæ Cantabrigienses*, he was educated, and lived for about fifteen years.

In a list of fen-birds forwarded as presents by Mr Balam, "out of marshland in Norfolk," on the occasion of the wedding of the daughter of Mr Moor, of Losely, in 1567 (printed in vol. xxxvi. of the *Archæologia*) we find "Cranes ix."; and that this name was not intended to refer to the Heron (as it does in many parts of the country at the present day, especially in Wales and Ireland), is evident from the circumstance that, in the same list, the latter bird is also particularly mentioned—"Hernshawes v." Dr Thomas Muffett, who lived in Wiltshire, at Bulbridge, near Wilton, where he died in 1590, wrote a curious little book entitled, *Health's Improvement*, wherein he set down the results of various experiments which he made on the gastronomic properties of the flesh of different kinds of game and wildfowl which were found in England in his day, and which he had tasted, adding at the same time brief remarks on the haunts in which they were to be found. He testifies to the fact that "Cranes breed (as old Dr Turner writ unto Gesner) not only in the northern countreys, but also in our English fens." He adds: "Pliny saith that in Italy they feed much upon grapes ; but with us they

feed chiefly on grain, and fenny seeds or bents." No wonder, then, that they were esteemed good eating, far superior in flavour to the Heron.

Drayton, in his *Polyolbion* (25th song), describes "the stately Crane" as a characteristic fen-bird in the early part of the seventeenth century (1622); and Sir Thomas Browne, writing towards the close of the same century (about 1667) an account of the birds of Norfolk, includes the Crane as "often seen here in hard winters, especially about the champain and fieldy parts"; from which it would appear that, at that date, this bird had ceased to breed in England. "It seems," he says, "they have been more plentiful; for in a bill of fare, when the mayor entertained the Duke of Norfolk, I met with Cranes in a dish."

Willughby, in his *Ornithology* (1678), writing of this bird, says: "They come often to us in England; and in the fen-countries in Lincolnshire and Cambridgeshire there are great flocks of them" (a statement repeated in the posthumously printed *Synopsis Avium* of John Ray, 1713; "but whether or no they breed in England (as Aldrovandus writes he was told by a certain Englishman" [Dr Turner above mentioned], "who said he had often seen their young ones), I cannot certainly determine, either of my own knowledge, or from the relation of any credible person." He adds: "The delicate taste of the flesh and the musculous stomach are sufficient arguments to evince that this bird feeds not at all upon fish, but only upon herbs, grain, and seeds of divers sorts, and it is likely upon insects too, as the

authors also that have written of it unanimously report."

It may be safely asserted, then, that the Crane has not been known to breed in England for more than two centuries. The drainage of their haunts in the fens, and the introduction of shoulder guns, with which they could be killed more easily and frequently than with the crossbow or with hawks, hawking also being then on the decline in England, are the causes which have no doubt chiefly operated to banish this fine bird from our island. It is now only met with as an occasional visitor in winter, or during the periods of its migration in spring and autumn.

We are no longer able to look forward at Christmas time to the appearance of a Crane "in a dish," but it is interesting to glance over the records which have come down to us, testifying to its former abundance, and the estimation in which it was once held.

THE FASCINATION OF LIGHT

FEW observers can have failed to notice the fascination and attraction which is exercised upon the lower animals at night by the exhibition of a light. Familiar examples of this are seen in the flocking of migratory birds towards a lighthouse, and the advent of moths to a lamp or candle. This has been so long and so well known, that hunters, fowlers, and fishermen have all taken advantage of it, each in his own way, to lure their respective quarry — a method, it must be confessed, which savours more of poaching than of true sport. Readers of American books on hunting in bygone days will recall descriptions of the way in which deer were enticed within rifle shot by showing a light, towards which they would slowly and timidly advance to their destruction. "Bat-fowling," which the old books define as "the taking by night of all manner of birds, great and small, which roost in shrubs and bushes," is thus described in *The Gentleman's Recreation*, 1697 :—

"You must be very silent till your lights are blazing, and you may either carry nets or none; if none, you must have long poles, with great bushy tops fixed to them; and having from a *cresset*, or vessel to carry fire in, lighted your straw or other

combustible matter, then must you beat those bushes where you think birds are at roost; which done, if there be any there, you will instantly see them fly about the flames. For it is their nature through their amazedness at the strangeness of the light and extreme darkness round about it, not to depart from it. They will even scorch their wings in the same, so that those who have the bushy poles may beat them down as they please."

The Indians of Washington territory, depending largely upon fish and wildfowl for their subsistence, used formerly to kill ducks at night with spears by the light of a fire kindled in a boat. This was occupied by two men, one to use the spear, the other to paddle; the process is now varied by using a gun instead of a spear.

In France, a popular method in Burgundy of killing wildfowl was by means of a metal reflector or *réverbère*. It was usually in the shape of a copper pan suspended from the neck of the operator, who caused the flame of several oil wicks to be reflected by the copper on the surface of the water, when the wildfowl swimming into the light were shot. Labruyère, a French writer on the wiles of poaching, who assisted at such a proceeding on the banks of the Durance, states that he saw fifteen ducks shot in this way in one evening.[1]

Similarly, with the aid of fire, are salmon killed in Scotland by the process known to river poachers as "burning the water." It has been thus described by an eye-witness :—

[1] Labruyère, *Les Ruses de Braconnage.*

"One evening, between eight and nine o'clock on the river Lyne, we saw the river poachers 'burning the water.' The party consisted of four men, one with a *cruisie* (cruse or cresset), a sort of portable grate, made of iron hoops, with a long handle, in which was some sacking saturated with paraffin oil, the blaze of which might rival the electric light. Another, with a *three-taed leister* (a three-pronged fork, or trident, used for striking fish), waded up stream in company with the one carrying the light, while the other two, with sacks, walked on each side of the river carrying the spoil. Occasionally the light became stationary, as a fish was seen on the spawning-bed, and in an instant the victim, wriggling on the spear, was forked to the nearest bank."

The above instances—and others might be mentioned—serve to show how universally, through man's agency, the lower animals are influenced and attracted by a strong light; and the question arises whether there are any instances in nature of wild creatures emitting a phosphorescent light, or presenting a flame-coloured surface for the purpose of attracting and alluring their prey. Setting aside the case of the glow-worm, in which the exhibition of a light serves a very different purpose—the congress of the sexes—there is reason to believe that the question may be answered in the affirmative; and the subject is a very interesting one. But in order to confine the inquiry within reasonable limits, and not to mention species which are not readily observable (as, for example,

luminous marine fishes, of which many species are known to exist), it will suffice to mention one or two common birds, which may be studied by anyone who will take the trouble to look for them in their proper haunts. For instance, the Heron and the Kingfisher.

Many years ago the late Edward Jesse, in the second series of his *Gleanings in Natural History*, wrote (p. 285): "It has been supposed that a light is emitted by Herons from their breast as they stand in the water of an evening waiting for fish. I should like to be assured of the accuracy of this supposition." A phosphorescent light is, of course, intended. Strange to say, hardly any information on this point is forthcoming, notwithstanding the number of books and articles which have been published from time to time on the subject of phosphorescence in animals and plants, the animals dealt with being chiefly fishes, marine invertebrates, and insects. Now it must have been often a matter for speculation with naturalists how the Heron, when fishing on a dark evening, especially during the winter months and in the bed of a stream overhung with bushes, contrives to see and stab with his long beak the fish he so patiently waits for. Can there be any truth in the supposition that certain portions of the plumage are luminous at night, whereby the bird is enabled to illumine the water over a small area in front of it sufficiently to see any fish within that area, and to use the light as a lure? If so, the question arises what part, or parts, of the plumage are likely to harbour phos-

phorescent particles. I have long entertained the notion that the alleged luminosity of the breast feathers of the heron is correlated with the so-called "powder-down patches" which have been described as existing not only in the European and American Herons and Bitterns, but in the Night Heron (*Nycticorax*), Sun-Bittern (*Eurypyga*), Boat-bill (*Cochlearius*), Shoe-billed Stork (*Balæniceps*), Kaku (*Rhinochetus*), and other marsh-loving birds which are of crepuscular or nocturnal habits. These powder-down patches—so called from the powder which is produced by the pulverising of the barbs of the feathers as fast as they develop—vary considerably in the area of the tracts they cover, as well as in their position.[1] The Bitterns have two pairs, the Herons three (one in front of the breast and one on each side of the hips between the hips and the tail), while the Boatbill—so called from the singular shape of the upper mandible, which resembles a boat, keel uppermost—has four pairs. It is true they are found in some other birds which do not fish at night, and are placed, not on the ventral, but on the dorsal surface. In this case they probably subserve some other purpose, *e.g.*, to enable the sexes to find each other in the dark.

As to the evidence that these curious tracts are luminous at night—that is to say, that the powder-down is phosphorescent—it must be admitted that

[1] Messrs Sheppard and Whitear, in their account of Norfolk Birds (1824-1825), noticed that the feathers of the Heron are "frequently loaded with a blue powder." In the American species the powder is said to be yellow.

A HERON FISHING.

it is not overwhelming, but such as it is, in the case of the Heron at least, it is sufficiently convincing. An American sportsman writes:—

"One evening, the moon having gone down, leaving me in the dark, I was making my way to my boat, when suddenly I perceived on the sands several dim lights, and when almost upon them, there came a flapping of wings, while above I saw indistinctly the forms of several large cranes (a name given to the Large Blue Heron of America, *Ardea herodias*). The light disappeared with them, and my opinion is that what I saw was phosphorescent light on the breast of the birds."

Mr C. F. Holder, who mentions this incident in his book on phosphorescent animals and plants,[1] adds the following comment:—

"I have been told by several sportsmen that they have heard of such an occurrence, and I have always been impressed with the belief that the greasy, oily, powder-down patches might become luminous under certain conditions, but never until the present year have I been able to find reliable personal testimony."

He then proceeds to give at some length the evidence referred to, which may be shortly stated as follows: Mr J. W. Worrall, of Philadelphia, being out wildfowling in Kansas on a clear, dark night, saw four lights, one of which he approached. He could see it plainly at the distance of 50 yards; it reminded him of phosphorescent wood, and was

[1] *Living Lights: A Popular Account of Phosphorescent Animals and Vegetables.* 8vo. London, 1887.

whitish. While slowly creeping towards it, he saw it disappear four times at intervals of about twenty seconds, from which he inferred that the bird (for such it proved to be) has the light under control, and governs it by raising or depressing the feathers that cover the powder down patches. When he fired at the bird the light on the breast was so intense that he distinctly saw the sight of his gun against it. The bird—a Great Blue Heron—fell where it was standing in 6 inches of water, and, taking it by the wings, he threw it on the shore, noticing three phosphorescent spots, one in front, and one on each side of the hips between the hips and the tail. The bird died slowly, the light gradually dying out, and disappearing entirely with death.

This fact is of great interest, showing, as Mr Holder observes, that the phosphorescence is not an accidental occurrence, depending upon a favourable condition of the greasy powder-down patches, or associated entirely with their decomposition, but is essentially due to some physiological action, and dependent upon the life of the bird; and the areas of the powder-down patches may be considered true photogenic structures. The bird shot as above stated was the Great Blue Heron (*Ardea herodias*), popularly known to American gunners as the "Blue Crane," and the other birds in which the light was observed were Night Herons (*Nycticorax nævius*). The light was in the so-called powder-down patches, which we may reasonably assume in all these birds serve to attract the fish on which they prey. It would be of great interest if any of our English

wildfowlers would confirm from their own experience the observations made in America.

It remains to notice another and different kind of lure employed by our own Kingfisher, as I have frequently observed, but of which I have never seen any mention in books. Lying on the grass by the side of a Thames backwater, I have watched a Kingfisher, flying down stream at full speed, suddenly "fling up," and remain hovering like a Kestrel with rapidly moving wings. As the bird in that position was facing me, I could see only the orange-coloured breast and the under surfaces of the wings, which are also orange. In this position the bird presented the appearance of a quivering flame or cresset. It remained thus hovering for, perhaps, five or six seconds, and then dropped like a stone into the water, recovered a fish, and flew down stream with it, to perch on some post or rail, on which it would rap the fish three or four times smartly, as if to stun it, and then swallow it whole. Never till then did I appreciate the significance of the Kingfisher's orange breast and the orange lining to the wings. It might be fancy, but it seemed to me as if the bird, on spying a shoal of small fish, showed his light, and as soon as a fish drew towards him it was struck like lightning and carried off. This is not the invariable mode of fishing adopted by the Kingfisher; it will frequently sit motionless on a rail or bough overhanging the water, waiting for a chance to descend on an approaching fish towards which its orange breast is directed.

Another fishing bird, which takes its prey by

first hovering and then descending suddenly upon it, is the Osprey; but as it fishes by day, hovers at a considerable height like a Kestrel, and has a white lining to the wings, its mode of procedure is not comparable to that of the Heron or the Kingfisher,

A KINGFISHER HOVERING.

for it has not the flame-coloured breast of the latter, nor has it been shown to have the powder-down of the former. Nevertheless, it was anciently believed to exercise some sort of fascination over the fish, allusion to which may be found in the works of Shakespeare and other dramatists of the Elizabethan age. But the story is too long to be here discussed.

THE LARGEST BIRDS THAT FLY

If the subject of inquiry were the largest bird that ever lived, there can be little doubt that the palm would have to be awarded to the extinct New Zealand Moa (*Dinornis maximus*), of which the total height was about 10 feet, the tibia, or thigh bone, measuring a yard in length. But this bird, like all the members of its genus, and like the Apteryx, Emu, Cassowary, Rhea, and Ostrich, which survive at the present day, was incapable of flight, and, therefore, for the present purpose need not be compared with those presently to be noticed. As, however, there is some conflict of opinion as to the probable height of the largest species of Moa, and a variation in the statements as to length of tibia in *Dinornis maximus*, it may be of interest *en passant* to refer to it. According to Messrs Nicholson and Lydekker (*Manual of Palæontology*, 3rd edit., 1889), the height (as above stated) was 10 feet, and the length of tibia 3 feet In Professor Newton's admirable *Dictionary of Birds* (art. "Moa") it is stated that *Dinornis maximus* is the largest of all the species, having a tibia measuring 39 in., and probably reaching a height of 12 feet The former statement having been published in 1889, and the latter in 1894, suggests as a pos-

sible explanation that between those dates a longer tibia (3 in. longer) came to hand, from which the increase in height of 2 feet was inferred; but the proportions in inches would be—36 : 39 :: 120 : 130, that is to say, the specimen with a tibia of 3 feet 3 in. would measure only 10 feet 10 in. in height, instead of 12 feet, as mentioned in the Dictionary quoted.

But this by the way. The problem I will now try to solve (and it is one of some little interest) is, "Which is the largest existing bird that flies?" The question is by no means easily answered offhand. Ninety-nine persons out of a hundred who are not naturalists would probably infer, from the marvellous stories they have read of lambs, kids, and even children being carried off by it, that the Lammergeier, or Bearded Vulture (*Gypaetus barbatus*) must be unquestionably the largest living bird that flies. Those who have travelled in Peru and Chili would doubtless maintain that the South American Condor (*Sarcorhamphus gryphus*) must surely exceed it in size; while passengers who have made a voyage to the Cape, or to the Falkland Islands, will feel convinced that no bird at the present day has a greater expanse of wing than the Wandering Albatross (*Diomedia exulans*). It is not possible to settle these rival claims without having recourse to actual measurement. "Estimated" expanse of wing is for our purpose useless; hearsay evidence must be discarded. What we want are facts, first hand, from those who have actually taken measurements and ascertained weights, or seen them taken by others in their presence.

If length of body from tip of beak to end of tail, expanse of wing measured between the extended tips, and weight of dead bird are to be taken as a test of size, it will probably surprise many persons to learn that the Lammergeier is not the largest bird of prey in Europe, and that quite as large, and somewhat heavier a rival has visited the British Islands within the memory of those now living. I refer to the great Griffon Vulture (*Gyps fulvus*), a specimen of which, as related in Yarrell's *British Birds*, was captured in 1843 near Cork Harbour.

This huge bird, when adult, measures from tip of beak to end of tail from 3 feet 10 in. to 4 feet 1 in. according to sex (the females, as with most birds of prey, being larger than the males); the expanse of wing is from 8 feet 10 in. to 9 feet 2 in., and the weight from 18 lb. to 20 lb.

Not much inferior in point of size, though somewhat less in weight, is the Cinereous Vulture (*Vultur monachus*), the male of which attains a length of 3 feet 6 in. and the female 3 feet 9 in., with an expanse of wing varying from 8 feet to 9 feet 10 in., according to age and sex, and an average weight of about 14 lb., the female bird being a pound or two heavier.

An inquisitive reader may here inquire how do these weights compare with those of the eagles which dwell in Scotland and the Isles, as well as in Ireland, and are met with from time to time in England on migration, generally in autumn.

An immature Golden Eagle from Loch Gair, ob-

tained in the month of August, weighed 9½ lb., and measured between the extended wings 6 feet 7 in. Another two-year-old bird, procured in Ross-shire in September 1897, weighed 11 lb.; a third, killed at Kylemore Castle, Galway, in October 1889, weighed 12½ lb. An immature White-tailed or Sea Eagle, shot at Brighton, weighed 10 lb.; another, killed at Arundel, barely 10 lb.; while a fine old bird in fully adult plumage, from Stornoway, Lewis, weighed no less than 16½ lb. This is the heaviest White-tailed Eagle of which I have any note. It has been referred to by Robert Gray (*Birds of the West of Scotland*, p. 17) as being in the collection of Sir James Matheson, Bart., of Stornoway, and the finest British example of the Sea Eagle he had ever seen. He adds, "compared with three or four other Sea Eagles in the same collection, its size, indeed, appears quite extraordinary, and had the specimen been darker in colour it might have readily been mistaken for the Northern Sea Eagle of Pallas."

It might be supposed that the Imperial Eagle would be larger and heavier than the Golden Eagle, but from actual comparison this does not appear to be so. Thus the Golden Eagle measures 3 feet to 3 feet 4 in. in length, 6 feet 6 in. to 7 feet 6 in. in expanse of wing, and weighs from 9 lb. to 12 lb., while the Imperial Eagle measures only 2 feet 6 in. to 3 feet in length, 6 feet 4 in. to 7 feet 1 in. in expanse of wing, and weighs on an average from 6 lb. to 8½ lb.

As for the Lammergeier, it will be found on comparison of measurements and weights, that

while in expanse of wing it measures no more than an adult Griffon Vulture (8 feet 3 in. to 9 feet 2 in.), its weight may be several pounds less.

Captain Hutton, writing of the Lammergeier as observed by him in the Himalayas, remarks :—

"Marvellous indeed are the stories told both by natives and Europeans of the destructive habits of this bird, and both accounts I fully believe have scarcely a grain of truth in them. All I can positively say upon the point, however, is that I have known the bird well in its native haunts for thirty years and more, and never once in all that time have I seen it stoop to anything but a dead carcase. As to carrying off hens, dogs, lambs, or children, I say the feat would be utterly impossible, for the creature does not possess the strongly-curved, sharp-pointed claws of the eagle, but the far straighter and perfectly blunt talons of the vulture."

Mr R. Thomson also, after close and constant observation of the habits of the Lammergeier for twelve years, writes :—

"I have never seen them attack or come down to a living animal. They have repeatedly sailed past close to my nets when I have had live fowls and pigeons picketed as lures for hawks and eagles. They have passed within a few feet of these without once showing a desire to pick up any of the birds; and this, too, on the tops of high mountains in a perfectly wild country, with no human habitation within miles. On the other hand, they will at once come down on a well-cleaned carcase, a heap

of bones, or the skeletons of smaller mammalia.[1] There must, of course, be some foundation (he adds) for the many statements that have been put forth as to the rapacious character of this bird. But this foundation I believe to consist in the natives constantly attributing the depredations committed by eagles to the Lammergeier."

As to the weight which the larger eagles can

THE LAMMERGEIER.

carry in the shape of prey, the writer last quoted says "the Golden Eagle will kill and carry off young deer (*i.e.*, fawns) and kids, as I have myself seen. One, at Strathmore, in Caithness, while devouring

[1] This does not quite accord with the remarks of Mr Abel Chapman, who, in his delightful book, *Wild Spain*, p. 314, quotes Manuel de la Torre, the best field naturalist in Spain, to the effect that the Lammergeier takes young lambs and kids, and that he shot one in the act of eating a rabbit which he had just seen it kill.

the carcase of a mountain hare, was attacked by a fox; a fight ensued, and after a severe struggle, in which the fox got badly torn by the eagle's talons, and the bird got severely bitten in the breast; the eagle, to save itself, took flight, with the fox holding on, until, at a considerable height in the air, the latter dropped to the ground and was killed by the fall." Mr Robert Gray, the author of *The Birds of the West of Scotland*, took pains to verify this story.

Mr Baillie Grohman, writing on chamois-stalking in the Tyrol, and referring to the natural enemies of the Chamois, says the full-grown eagles (*Stein adler* or Golden Eagle) are of immense size, measuring from 8 feet to 8½ feet from tip to tip of their wings. It is said that one of these birds will take up a Chamois bodily and carry it off to its young, and in support of this statement he quotes the following extract from his diary:—

"June 27, 1871.—When taking out a young eagle from the Falknervaud, near Johanneslaus, I found in the nest (which was quite inaccessible except by means of a 50-fathom rope) the half-devoured carcase of a full-grown chamois, three pairs of 7 in. chamois' horns, and the corresponding bones of the animals, one pair of goat horns, the remains of a mountain hare, and the head of a roe-deer fawn."

Mr A. O. Hume, writing of Pallas's Sea Eagle, says:—

"A Grey Goose will weigh on the average 7 lb. (much heavier are recorded), but I have repeatedly seen good-sized grey geese carried off in the claws

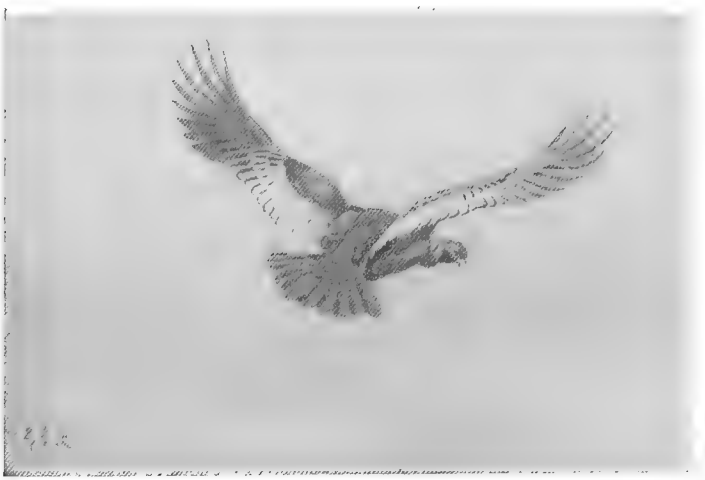
of one of these eagles, the bird flying slowly and low over the surface of the water, but still quite steadily."

He once saw an eagle of this species on the river Jumna capture a fish so large that the bird only with difficulty succeeded in reaching a low sandbank in the river with its prey. As it made for this bank it flew so low, and with such difficulty, that the writhing fish in its claws struck the water every few yards, and twice seemed likely to pull its persecutor under water. On reaching the sandbank some 250 yards distant from the observer, a shot from his rifle caused it to quit the fish, which was then recovered and found to be a Carp (*Cyprinus rohita*), weighing over 13 lb., that is, considerably heavier than its captor. For the reasons above given, such a feat would be impossible for the Lammergeier.

Come we now to the Condor of South America, a bird which is known to have a wide geographical range. It is found on the west coast, from the Strait of Magellan along the Cordillera as far as eight degrees north of the equator. The steep cliff near the mouth of the Rio Negro is its northern limit on the Patagonian coast, and they have there wandered about 400 miles from the great central line of their habitation in the Andes. Further south, among the bold precipices at the head of Port Desire, the Condor is not uncommon; yet only a few stragglers occasionally visit the sea coast. A line of cliff near the mouth of the Santa Cruz, Patagonia, is frequented by these birds, and

about eighty miles up the river, where the sides of the valley are formed by steep basaltic precipices, the Condor reappears. From these facts, says Darwin, from whom I quote (*Naturalist's Voyage Round the World*, p. 182), it seems that the Condors require perpendicular cliffs. In Chili they haunt during the greater part of the year the lower country near the shores of the Pacific, and at night several roost together in one tree; but in the early part of summer they retire to the most inaccessible parts of the inner Cordillera, there to breed in peace. As regards the expanse of wing in the Condor, there appears to be some conflict of testimony, although it may well be that the discrepancy in the measurements which have been recorded is due to the fact that they were taken from birds of different ages and sexes. Thus, in the journal above quoted, under date April 27, 1834, at Santa Cruz, Patagonia, Darwin writes: "This day I shot a Condor. It measured from tip to tip of the wings 8½ feet, and from beak to tail 4 feet." From measurements supplied by others it would appear that this was quite a small one. In Ecuador, for example, the largest seen by Mr Edward Whymper measured 10 feet 6 in. from tip to tip of extended wings, although he remarked that most of those seen at Antisana and elsewhere were not so much as 9 feet (*Travels in the Andes*). The experience of Captain George Byam, the author of *Wanderings in some of the Western Republics of America*, is instructive on the subject of Condors. He saw many which measured 12 feet in expanse of wing, and one of

13 feet, while the largest out of several which he shot in Chili measured exactly 15 feet from tip to tip when pulled out fairly and not too hard. "It was," he says, "a very powerful, heavy bird, with legs almost as thick as my wrist, and the middle claw or finger, which I kept, was 7 in. in length." Mr N. E. Bieber, writing in the *Field* of February 11,



THE CONDOR.

1899, on "Deer Shooting in Bolivia," remarks incidentally that a good-sized male Condor will measure 15 feet across the wings, thus confirming the observation long previously made by Captain Byam, a good sportsman and accurate writer.

Dr Robert Cunningham, in his *Natural History of the Strait of Magellan* (1871), describing an exploration of the Patagonian coast between Cape Possession and Dungeness Spit, recounts his falling

in with seven or eight Condors, one of which he tried in vain to stalk.

"It is," he says, "a truly magnificent bird when seen wild and on the wing; and one cannot be surprised that the most exaggerated accounts were given by the older travellers of the dimensions to which it attains, as much as 18 feet having been sometimes assigned to the expanse of wing."

This, of course, is mere guesswork, and not an ascertained measurement. Some idea of the size of the bird may be gained from an inspection of its furcula, of which he gives a figure (p. 303) from a specimen picked up on the beach.

If weight alone were a criterion of size, the Steamer Duck of the Falkland Islands (*Micropterus cinereus* — *Anas brachyptera* of Latham) would challenge comparison with some of the birds above named. The largest obtained by Dr Cunningham, who gives an excellent account of it (*op. cit.*, p. 93), measured 3 feet 4 in. from bill to tail and weighed 13 lb., while Captain Cook mentions in his *Voyage* that the weight of one was 19 lb. Captain Philip King, who observed this "gigantic oceanic duck" at the Falklands, described it as the largest he had ever seen (*Voyage of the* Adventure, i. p. 36), and remarked upon the small size of the wings, which, "not having sufficient power to raise the body, serve only to propel it along rather than through the water, and are used like the paddles of a steam vessel. Aided by these and its strong, broad-webbed feet, it moves with astonishing rapidity. It would not be an exaggeration to state

its speed at from twelve to fifteen miles an hour." This bird, however, being incapable of flight, at all events when fully adult (see Newton's *Dictionary of Birds*, p. 518), is not comparable with those large pinioned species above mentioned.

As for the Wild Swan, which might seem to challenge comparison with them, it may be

THE WILD SWAN OR WHOOPER.

remarked *en passant* that an adult Whooper (*Cygnus ferus*) will measure 4 feet. 10 in. from tip of bill to end of tail (the long neck counting for much), 7 feet in expanse of wing, and will weigh from 18 lb. to 25 lb. Here it will be seen that, notwithstanding the enormous weight, the extent of wing is no greater than in the Golden Eagle, much less than in the Griffon Vulture, Cinereous Vulture, and Lammergeier, and only half that of the Condor.

For our present purpose it remains only to ascertain what has been recorded on good authority of the measurements and weight of the largest species of Albatross (*Diomedia exulans*). It is found throughout the Southern Ocean, and is seldom met with further north than lat. 30° S., although stragglers have from time to time been reported as occurring beyond that limit. The literature relating to this bird is very extensive, so much so, indeed, that it will be necessary to pass over many facts of interest concerning it, in order to confine attention to the only two points which have any bearing on the present inquiry, namely, dimensions and weight.

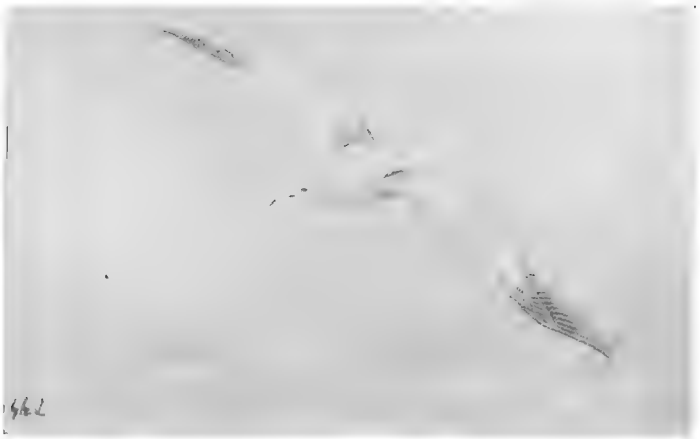
Here is a good observation of the kind needed by the late Dr George Bennett, of Sydney. In his *Gatherings of a Naturalist in Australasia* (1860, p. 72), he writes:—

"On June 8, in lat. 37° 15′ S., long. 16° 27′ E., we captured the unusual number of seven specimens of the great Wandering Albatross. They were elegant birds of large size, with fine and shining plumage, but were quite helpless and stupid when brought on board. The size of the largest was as follows: Length from the base of the bill to the extremity of the tail, 3 feet. 10 in.; size of the expanded wings, 11 feet 8 in. In others the extended pinions measured from 10 feet 4 in. to 11 feet; indeed, I consider 11 feet the general measurement. I have met with only one specimen in which the spread of wings measured 14 feet. The difference of sexes did not, in any of these

specimens, make any alteration in size; and although the plumage differed through age, it did not afford any sexual distinction."

The late Mr W. Ayshford Sanford, writing of Albatrosses seen during a voyage to Australia, and particularly referring to those skinned and dissected by himself (*Zoologist*, 1889, p. 387), remarks:—

"I have never measured an Albatross which



THE WANDERING ALBATROSS.

was more than 11 feet in expanse of wing—I think the exact measurement was 10 feet 10 in.—but I have been confidently assured by others that they have measured some as much as 14 feet.

This confirms the above-mentioned statement by Dr Bennett.

Herr Reischek, who visited and described a remarkable breeding haunt of the Wandering Albatross in the Auckland Islands (*Trans. N.Z.*

Inst., 1889, p. 126, and *Zoologist*, 1889, p. 337), gives the following dimensions of some that he measured: Total length from tip of bill to end of tail, 3 feet 3 in.; bill 7 in.; tail, $7\frac{1}{4}$ in.; whole wing, from 4 feet 10 in. to 5 feet 10 in.; primaries, 1 foot 8 in.; whole leg, 1 foot 10 in.; tarsus, $4\frac{1}{2}$ in.; middle toe, 7 in. By the expression "whole wing" is evidently intended the length from the body (not from the carpal joint) to the end of the longest primary, just as the expression "whole leg" includes more than the tarsus.

Out of more than a hundred specimens of the large Albatross (*D. exulans*) caught and measured by Mr J. F. Green (see his *Ocean Birds*, p. 5), the largest was 11 feet. 4 in. from tip to tip. This, he says, was confirmed by the experience of a ship's captain, who in forty years had never found one over that length. As this bears out the observations of Dr Bennett and Mr Sanford, we may take it that 11 feet represents the normal expanse of wing in a fully adult bird of this species.

Captain F. W. Hutton, who has paid much attention to the problem of flight, has contributed to *The Ibis* for January 1903 an instructive paper on the flight of Albatrosses, with figures reproduced from photographs of these huge birds on the wing. He endorses the statement made by Gould that the average weight of the Wandering Albatross is 17 lb.

The following table will render possible a ready comparison of the species named :—

Name of Species.	Length.	Expanse of Wing.	Weight.
Golden Eagle	3 ft. to 3 ft. 4 in.	6 ft. 6 in. to 7 ft. 6 in.	9 lb. to 12 lb.
Sea Eagle.	2 ft. 6 in. to 2 ft. 10 in.	7 ft. to 8 ft.	10 lb. to 16 lb.
Imperial Eagle (India)	2 ft. 6 in. to 2 ft. 8 in.	6 ft. 4 in. to 7 ft. 1 in.	6 lb. to 8¾ lb.
Imperial Eagle (Spain)	2 ft. 6 in. to 3 ft.	6 ft. 3 in. to 6 ft. 10 in.	8½ lb. to 10¼ lb.
Wedge-tailed Eagle (Australia)	3 ft.	6 ft. 8 in. (Gould)	9 lb. (Gould)
Griffon Vulture.	3 ft. 10 in. to 4 ft. 1 in.	8 ft. 10 in. to 9 ft. 2 in.	18 lb. to 20 lb.
Cinereous Vulture	3 ft. 6 in. to 3 ft. 9 in.	8 ft. to 9 ft. 10 in.	14 lb. to 18 lb.
Lammergeier	3 ft. 8 in. to 4 ft. 1 in.	8 ft. 3 in. to 9 ft. 2 in.	10 lb. to 14 lb.
Lammergeier	3 ft. 8 in. to 4 ft. 1 in.	8 ft. 6 in. to 9 ft. (Prince Rudolph)	16 lb. (Chapman)
Condor (Patagonia)	3 ft. 6 in. (Sharpe)	8 ft. 6 in. (Darwin)	Not stated
Condor (Ecuador)	3 ft. 6 in.	10 ft. 6 in. (Whymper)	Not stated
Condor (Chili)	Not stated	12 ft. "many" (Byam)	Not stated
Condor (Chili)	Not stated	13 ft. "one" (Byam)	Not stated
Condor (Chili)	Not stated	15 ft. "largest" (Byam)	Not stated
Bustard (Norfolk)	3 ft. 9 in.	6 ft. 6 in.	24 lb. (Stevenson)
Bustard (Seville)	Not stated	7 ft. 3 in.	26 lb. (Nicholson)
Bustard (Seville)	Not stated	7 ft. 1 in.	28 lb. to 30 lb. (Chapman)
Bustard (*E. Kori*,) (S. Africa)	4 ft. 8 in.	8 ft. to 9 ft. (male)	30 lb. to 35 lb. (Layard)
Crane (India)	3 ft. 8 in. (Tickell)	6 ft. 6 in. (Tickell)	10 lb. 8 oz. (Zool., 1876)
Crane (England)	4 ft. (Yarrell)	6 ft. 6 in.	10 lb. 13 oz. (Stevenson)
Stork	3 ft. 6 in. to 3 ft. 8 in.	8 ft. to 9 ft.	8 lb. to 10 lb.
Heron	3 ft.	5 ft. to 6 ft.	5 lb. to 5½ lb.
Wild Swan	5 ft. (Selby)	7 ft. to 8 ft. (Selby)	18 lb. to 25 lb.
Albatross (*D. exulans*)	3 ft. 10 in.	11 ft. to 14 ft. (Bennett)	17 lb. (Gould)
Albatross (*D. exulans*)	3 ft. 10 in.	10 ft. 10 in. (Sanford)	Not stated
Albatross (*D. exulans*)	3 ft. 10 in.	11 ft. 4 in. to 12 ft. (Hutton)	17 lb. (Hutton)

From this table it will be seen that, while the heaviest bird capable of flight is the South African Bustard, its expanse of wing is 3 feet less than that of the famous Albatross, and 6 feet less than that of the largest Condor on record.

It is somewhat curious that the Australian Bustard, though said to be larger than our bird,

THE BUSTARD.

standing higher on its legs, and with longer neck, weighs considerably less. Gould, who "frequently encountered and killed it both on the plains of the Lower Namoi and also in South Australia," gives the weight of the male bird as from 13 lb. to 16 lb. The Great Bustard of South Africa (*Eupodotis cristata*), the Kori Bustard of Burchell's *Travels*, and the "gom paauw" of the colonists, according

to Layard (*Birds of South Africa*), weighs from 30 lb. to 35 lb.

Mr Carl Schneritz informed me in 1899 that he shot two of these large African Bustards on the high veld between Scheenspruit and Rustenberg in the Transvaal, and that the larger of the two, a male, measured 4 feet 6 in. in length, 9 feet in expanse of wing, and weighed 37 lb. The hen bird, which was smaller, weighed 30 lb. These weights were carefully ascertained by the late General Smith with his own scales on his farm at Oliphant's Nek.

From a comparison of the measurements given in the foregoing table it will be seen that there is not much difference in the dimensions of the larger eagles above mentioned, all of which are less than those of the largest vultures. The far-famed Lammergeier does not exceed in size the Griffon Vulture, nor does it weigh so much by several pounds; while in point of size the Giant Albatross of the Southern Ocean, with an average expanse of 11 feet 4 in. has to yield to the Condor of Chili, whose extended pinions have in many cases measured 12 feet, and in one instance, on good authority, the almost incredible width of 15 feet.

SMALL BIRDS ON MIGRATION CARRIED BY LARGER ONES

THE late Dr John Rae, the well-known Arctic traveller, at a meeting of the Linnean Society read a paper relating to the birds and mammals of Hudson Bay Territories, and in the course of his remarks referred to the assertion of the Cree Indians, both at Moose and York Factory, that a small passerine bird, which was pointed out to him, but the name of which he had forgotten, habitually avails itself of the passage of the Canada Goose when migrating to get a lift in the same direction, they having frequently seen it fly off from a goose when shot, or shot at, on the wing. All the coast Indians of Hudson's Bay, says Dr Ray, devote a month or more every spring to wildfowl shooting (chiefly geese), the birds killed forming their entire food for the time. As soon as the geese begin to arrive, the Indian constructs a concealment of willows and grass, usually near a pool of open water, at the edge of which he sets up decoys. When geese are seen approaching, usually flying at a great height, the Indian imitates their call, and the geese, on seeing the decoys, circle round, gradually coming lower down until within shot, when they are fired at. It is from these high-flying geese that the

small birds are seen to come. If the geese are flying low it is a pretty sure indication that they have already rested on the ground, somewhere near, after their long flight, when of course their tiny passengers would have alighted. The Indians on the shores of Athabasca and Great Slave Lakes—both great resorts of wild geese—and those living on the Mackenzie River, more than a thousand miles to the north-west of Moose Factory, tell the same story, and from the positive statements which were made to him on the subject Dr Rae saw no reason to doubt the assertion. So far as he could ascertain, the Canada Goose is the only species in North America which thus acts the part of a locomotive, and conveys small passengers from place to place; but in Europe and Africa the Common Crane and the Stork have on very respectable authority been credited with performing a similar friendly office.

Dr Lennep in his *Bible Customs in Bible Lands* refers to the many small birds which find their way from Palestine into Arabia and Egypt on the backs of Cranes, over lofty mountains and sea, which without such aid it would be difficult to cross. In the autumn flocks of Cranes are seen coming from the north with the first cold blast from that quarter, flying low, and uttering peculiar cries as they circle over the cultivated plains. Little birds of different species may then be seen flying up to them, while the twittering of those already comfortably settled upon their backs may be distinctly heard. On their return in spring they fly high,

perhaps considering that their little passengers can easily find their way down to the earth.

In some instances, however, the small birds have been seen to come off the backs of the larger ones just as the latter were about to alight. An American visitor to the Island of Crete in the autumn of 1878, as related by Professor Claypole, of Antioch College, Yellow Springs, Ohio,[1] satisfied himself that Wagtails and other small birds cross over from Europe on their southward migration on the backs of Cranes; and although, on first hearing the statement made, he was extremely incredulous, he afterwards, on one occasion, had ocular demonstration of the fact. A fisherman in his presence discharging his flint-lock at a flock of passing Cranes, he saw three small birds rise up from among them and disappear.

A German author, Adolf Ebeling, writing in the *Gartenlaube*, asserts that he found it currently believed at Cairo that Wagtails and other small birds cross from Europe to Nubia and Abyssinia on the backs of Storks and Cranes, and details the result of conversations which he had with several independent witnesses, all testifying to the same thing. He then proceeds: "At supper, in the Hotel du Nil, I related the curious story to all present, but, naturally enough, found only unbelieving ears. The only one who did not laugh was the Privy Councillor von Heuglin, the famous African traveller, and, excepting Brehm, the most celebrated authority of our time on the birds of

[1] *Nature*, February 24, 1881.

Africa." On asking his opinion, he remarked, "Let others laugh, they know nothing about it. I do not laugh, for the thing is well known to me. I should have made mention of it in my work if I had had any personal proof to justify it. I consider the case probable, though I cannot give any warrant for it." "My discovery, if I may so call it," continues Herr Ebeling, "I would have kept to myself, even after Heuglin had thus expressed himself, had I not since discovered a new authority for it. In the second edition of Dr Petermann's great book of travels I find the following: Professor Roth, of Munich, related to me, in Jerusalem, that the well-known Swedish traveller, Hedenborg, made an interesting observation on the island of Rhodes, where he was staying. In the autumn, when the Storks came in flocks over the sea to Rhodes, he often heard the notes of small birds, without being able to see them; but on one occasion he observed a party of Storks just as they alighted, and saw several small birds come off their backs, having been thus evidently transported by them across the sea.

In the face then of such testimony as that above mentioned, and the admission of his belief in the story by so experienced an ornithologist as Heuglin, the conclusion seems inevitable that there must be some truth in it, and it has received some confirmation from a singular observation since made in England. Mr T. H. Nelson, of Redcar, writing in the *Zoologist* for February, 1882 (p. 73), reports an occurrence related to him by an eye-witness, Mr

Wilson, the foreman on the South Gare Breakwater, at the mouth of the Tees, which bears directly on the question at issue.

On the morning of October 16, fine and cold, wind northerly, Wilson was at the end of the Gare, when he saw a "Woodcock Owl" (Short-eared Owl) "come flopping across the sea." As it came nearer he saw something between its shoulders, and wondered what it could be. The Owl came and lit on the gearing within ten yards of where he was standing, and directly it came down a little bird dropped off its back and flew along the Gare. He signalled for a gun, but the Owl saw him move, and flew off. He followed the small bird, however, and secured it, and on taking it to the local bird-stuffer for preservation learnt that it was a Golden-crested Wren.

To see its irregular, and apparently weak, flight in passing through the air on a stormy day, it would never be supposed that so tiny a creature as the Golden-crested Wren would attempt to cross the sea, or would succeed in doing so if it tried. But that it travels to and from the Continent in spring and autumn is a fact which has been well ascertained by many competent observers. On the coasts of Yorkshire and Lincolnshire, says Mr Cordeaux, the autumnal migration of the Gold-crest is as well known as that of the Woodcock, and from its usually arriving just before that species, it is known as the "Woodcock Pilot." The North Sea fishermen assert that these little birds often alight on their boats, and in foggy weather perish by hundreds.

The same thing has been observed by Mr E. T. Booth off the coast of Norfolk. So recently as October 1905, two cases were reported of Gold-crests coming on board ship at some distance from land. In the one case several of these little birds alighted on board H.M.S. *Russell*, while going from Broadford Bay to Berehaven on October 11; and on the same day a similar occurrence was noted on H.M.S. *Good Hope*, while steaming along the coast of Ireland, some 12 or 15 miles from land, between Wicklow Head and Hook Point.

There is, then, nothing so improbable as might at first sight appear in a Gold-crest crossing the North Sea and alighting tired on the broad platform afforded by the expansive back and wings of a Short-eared Owl travelling at slower speed beneath it. At anyrate, the fact remains that the Gold-crest was seen to descend from the Owl's back when the latter alighted, and its identity was placed beyond doubt by its subsequent capture. There is verily in heaven and earth much that is still undreamt of in our philosophy.

MARCH CUCKOOS

THE migration of birds has now been so long and so patiently studied by good observers in different parts of the country that we may indicate with confidence the average date of arrival of all our summer visitors, and even say where they spend the months in which they are absent from England. Especially is this the case with some of the better-known species, because more frequently observed, such as the Swallow and Sand Martin, the Chiffchaff, Wheatear, Nightingale, and Cuckoo. These birds are more or less familiar to the majority of country folks, and many persons make a practice of looking for their earliest and latest appearance and reporting the dates for publication. Unfortunately, there are people who do not distinguish, let us say, a Swallow from a House Martin, or a Cuckoo from a Sparrow Hawk, but who nevertheless do not hesitate to chronicle their mistakes as if they were facts, too often appending only their initials, or some *nom de plume*, which makes it impossible for any serious recorder to utilise their observations.

Obviously the most trustworthy records are those which have been kept by some observant naturalist in one locality uninterruptedly for many years, and fortunately for our guidance several such series of

accurate data have been preserved and published. Several well-known naturalists have kept records of this kind for twenty, thirty, and forty years, and in one instance, where members of a Norfolk family continued the observations commenced by a predecessor, a journal was carefully kept for more than

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a century. It is to records such as these that one naturally turns for accurate information as to the arrival of migratory birds, especially when there is reason to doubt the truth of a report which announces the appearance of some particular species many weeks before the usual date of its arrival.

To take the case of the Cuckoo. Scarcely a year elapses in which we do not read in the daily

papers the announcement that a Cuckoo has been seen or heard in March, and in 1904 correspondents were bold enough to affirm that they had seen the bird in February. There is, of course, no inherent impossibility in the arrival of this bird a week or ten days earlier or later than its usual time. But when we are asked to believe that it was seen nearly two months before the average date of its appearance in this country a demand is made upon our credulity which it is very difficult to concede.

From numerous observations made by competent naturalists in different parts of the country it appears that the average date for the appearance of the Cuckoo throughout the whole of England and Scotland is April 23 (St George's Day); for the south of England, April 15; and that the earliest date reported by a trustworthy observer is April 6. In the north of Scotland the arrival of the Cuckoo is looked for during the first days of May, fully a fortnight later than in the south of England, and in Ireland, according to Messrs Usher and Warren (*Birds of Ireland*, p. 113), "the ordinary time of its arrival is from April 16 to 30, though it has been frequently noticed in the first half of that month from the 2nd onwards." Not a word is said by any of the observers quoted except the last named concerning even the occasional appearance of a Cuckoo in March. Some years ago, on receiving a report of a Cuckoo seen in Shropshire on March 6, I invited the opinions of certain well-known naturalists who had been observing the habits of birds all their lives, with a view to ascertain whether

they had ever known a single confirmatory instance of such a report, and the replies received all expressed the incredulity of the writers.

The late Lord Lilford wrote :—

"I have not as yet (May 1894) ever seen a Cuckoo that was even supposed to have been obtained in this country before April. Till I have seen a specimen positively sworn to by a competent person as so obtained I shall remain as at present entirely incredulous."

Mr John Cordeaux, writing from North Lincolnshire on the 15th April 1899, stated that, on looking through his notes of the previous forty years, he found the Cuckoo seldom recorded before the fourth week in April, that is after the 21st. The earliest he had noted was heard on April 8.

The late William Borrer, author of *The Birds of Sussex*, wrote :—

"Having kept notes of the arrival of the Cuckoo in this country for more than thirty years, I find the earliest to have occurred on April 6, 1844, but about the 14th is the more usual date."

Mr James Carter, of Masham, Yorkshire, an old correspondent, wrote :—

"I find that the earliest record of the arrival of the Cuckoo during the last twenty years was on April 17, and it is usually about the third week in April before it is seen here in Yorkshire."

Writing from Bloxham, Banbury, Mr O. V. Aplin, author of *The Birds of Oxfordshire*, remarked :—

"The Cuckoo seldom reaches North Oxon

before the last week in April. In twelve years (1878-1899) the average date of my own observation of it has been the 27th or 28th. The earliest date the 20th in 1883."

Mr Thomas Southwell, of Norwich, after forty years' experience, wrote :—

"Such a bird as a 'March Cuckoo' has no place in my experience. It has struck me that where any attempt has been made to describe these early birds, the few and very vague particulars given have always appeared to indicate the plumage of the young bird, an obvious absurdity, but very suggestive of the Kestrel. I have now before me a table of *Indications of Spring*, extending over a very long period, and kept by a succession of naturalists of the same family and in the same parish in Norfolk. The date of the Cuckoo's first note is there recorded for 106 years, the earliest being on April 9, 1752, and the latest on May 7, 1767, and the mean of 106 years April 23."

In addition to the foregoing records, the following reports of early Cuckoos appear equally worthy of credence. The Rev. W. A. Faulkener, of Churchill Rectory, Worcester, wrote : "The Cuckoo arrived to-day (April 4, 1894). I have booked its coming to this spot for the last thirty years, and this is the earliest date I have on record during that period. From the 15th to the 21st are the most usual dates." The same year Mr J. G. Whitehead, of Woodfalls, Yalding, Kent, reported : "I saw and heard the first Cuckoo on April 4. It

was very noisy, uttering its welcome note all the afternoon, and in one instance flew close by me." A third observer, Mr C. Gillanders, of Berkeley Road, Gloucester, wrote: "On Saturday, March 31, I saw a Cuckoo here, and on Monday, April 2, both saw and heard one." Thus there appears to be good evidence that the Cuckoo has been both seen and heard in the south of England at least a fortnight before the average date of its arrival, April 15, as fixed by careful observations extending over many years. But of late there has been a noticeable tendency on the part of a few individuals to "beat the record" by advancing the date of arrival to the middle and even the beginning of March, until the spring of 1904, when, as above stated, we were asked to believe that a Cuckoo was seen in Hampshire on February 27. It can hardly be doubted that the observers referred to were deceived by appearances. It is surprising how few people are to be trusted, either in the matter of eyes or ears, in regard to the Cuckoo. Many do not know a Cuckoo on the wing from a male Sparrow Hawk, which it resembles in size, colour, length of tail, and flight; others convince themselves that they have heard this bird's notes when they have been listening to a clever imitation by some village bird-nesting boy, or to the still more deceptive notes of a cuckoo clock in a neighbouring cottage. Before one can admit that Cuckoos are to be found in England during the early days of March and the last week of February, it will be necessary to produce better

evidence of the fact (if it be one) than has yet been supplied. Professor Newton, in a footnote to the article "Cuckoo" in the fourth edition of Yarrell's *British Birds* (vol. ii., p. 389), remarks: "Its arrival has frequently been reported in March or earlier still, but such records must be treated with suspicion if not incredulity."

Since this chapter was written, Mr J. G. Millais, writing from Horsham on April 8, 1905, remarked:—"I have always been sceptical about 'March Cuckoos,' but have just been converted. On April 1 I heard a Cuckoo calling for some time in an oak tree in front of Warnham Court, Horsham, and both heard and saw another (or possibly the same) on April 2. Now this bird the Warnham gardeners assured me had been calling all day on March 31, and I see no reason to doubt their statement. They all heard it, and remarked upon the unusually early arrival of the bird."

Mr James Andrews of Beaminster, Dorset, reported the same week that the keeper on the Mapperton estate in that neighbourhood informed him that he heard the Cuckoo on April 1, and two other men informed him that they had heard it there on the previous day.

CUCKOO SPIT

DURING the spring and early summer few persons, and especially those who own gardens, can have failed to notice on various plants a white frothy substance commonly known as "cuckoo spit," and many doubtless have speculated on its precise nature and origin without arriving at any very definite or accurate conclusion. That it is the work of an insect, *Aphrophora spumaria* or *bifasciata* is soon made clear by the detection of a small larva in the midst of the frothy mass, but "what insect," and "in what way is the substance produced," are questions which with many persons perhaps remain unsolved.

It is curious that it should be so, seeing that the true nature of the secretion was made known two centuries ago (1705) by a French naturalist (Poupart) in the *Mémoires* of the Academy of Paris; but the general ignorance on the subject seems to be due to the want of definite information, or at least to the very vague statements on the subject afforded by the ordinary text-books. Many authors content themselves with stating that the so-called "cuckoo spit" is the work of a small homopterous insect known as *Aphrophora spumaria*, but they omit to state whether it is caused by the perfect insect or by its

larva, and whether the substance is exuded by the plant on being punctured by the insect's proboscis, or is in the nature of an excrementitious deposit on the surface of the leaf. We have heard both these views expressed, but on inquiry it appeared that our informants were merely stating what they supposed to be the case, and not what they had ascertained by actual observation. Reference to half a dozen text-books has failed to show which of these explanations is the right one, but, fortunately, we are not without an authoritative statement on the subject. The late Professor Westwood, in his *Introduction to the Modern Classification of Insects*, writing of the order Homoptera, the members of which he describes as having a convex body, with short antennæ and four wings, entirely membranous and deflexed, the mouth arising from the under and hinder surface of the head, the mandibles and maxillæ enclosed in the labium, proceeds to deal with the family *Cercopidæ*, the species of which are constantly found amongst plants, upon the juices of which they subsist by introducing their rostrum into the stems or leaves. They belong to the same order as the *Aphidæ*, but to that section which has the whole of the upper wings leathery.

"One of the best known insects in this family," he says, "is the *Aphrophora spumaria*, a species of small size, which frequents garden plants, the larva and pupa investing themselves with a frothy excrementitious secretion which has given rise to various fancies. *Cuculorum nascuntur spumo* was

the notion entertained by the ancients; whilst the modern names 'froghopper' and *crachat de grenouilles* indicate their supposed origin from another tribe of animals."

Many years later, in a notice of a tube-making homopterous insect from Ceylon, presently to be mentioned (*Trans. Entomol. Soc. Lond.*, 1886, p. 329), the same distinguished entomologist thus referred to the "cuckoo spit":—

"It is no other than the fluid excrement of the larva of the insect, consisting of the juices of the plant on which it subsisted, and which, being discharged with very little alteration in its nature, drop by drop from the insect, forms an accumulated moistened mass, which keeps the body of the insect in a moist condition until it is ready to assume the perfect state."

The precise manner in which the froth is formed is thus described by an American observer, Professor Morse:—

"The larva pierces the plant with the mouth parts and commences to suck the juice. While this action is going on a clear watery fluid escapes from certain pores in the body, and in a short time the insect is completely immersed in it. As it is obliged to breathe air, it secures this by turning up the hinder part of the body, and by means of little appendages clasps a bubble of air, which then flows along the under side of the abdomen. Here it is taken in through the spiracles, and, having been so used, is allowed to escape in the fluid in which the insect is immersed. This operation is repeated

over and over again until the fluid becomes filled with these little bubbles, and assumes the appearance of froth."

The larvæ are plentiful in spring, while the perfect insects abound most in autumn.

According to Professor Westwood a species of *Aphrophora* is found abundantly on trees in Madagascar, the larva of which has the power of emitting a considerable quantity of clear water, especially in the middle of the day, when the heat is greatest. A still more curious case is that of the tube-making homopteron, allied to *Aphrophora* already referred to, as found in Ceylon. The full-sized larva tubes are about half an inch long and about one line in diameter, of the thickness of writing paper, of a dirty white colour, with the surface finely transversely wrinkled, the basal portion being dilated and curved so as partially to clasp the twig on which it is fixed. The larva resides in the tube, and discharges at intervals a clear watery fluid, which escapes from the tube drop by drop.

The phenomena known as "weeping trees" are due to insects of this family, the *Cercopidæ;* some of the species, says Dr Sharp, make such copious exudations of this kind that the drops have been compared to a shower of rain (*Cambridge Natural History*, "Insects," p. 577).

As an illustration of the inconvenience which arises from changing well-known names, it may here be remarked that Dr Sharp calls the English insect *Philænus spumarius*, but although he devotes

nearly a page to a consideration of the family to which it belongs, and notices the larvæ, which have the power of "emitting the liquid in the form of bubbles, which accumulate round the insect and conceal it" (p. 577), the words *Aphrophora spumaria* and "cuckoo spit" are not to be found in his index. Consequently the reader, who might not happen to know that the insect belongs to the order Homoptera, might suppose that there is no mention of it in the volume. Cross references to these names in the index would certainly have been useful. But we find it under the heading "Froghopper," another name for it, bestowed on the larval form on account of its wonderful powers of leaping.

THE CUCKOO SPIT AND INSECT (*APHROPHORA BIFASCIATA*).

The perfect insect is about a quarter of an inch in length. It is commonly to be found on pinks and carnations, remaining stationary on a plant for several weeks, and is especially abundant on willows. A smaller species (*A. bifasciata*) is found usually on rose bushes and other garden plants. When the larvæ are deprived of the shelter afforded by the secretion they appear quite helpless, and if the day be hot are almost immediately killed. Hence an effectual mode of clearing plants of "cuckoo spit" is to brush it off during sunshine, and the insects are at the same time destroyed,

It has been stated by some writers (*e.g.*, by

Mr Stainforth Green) that no damage is caused to the plant by the presence of the larvæ, but Mr George Nicholson in his *Illustrated Dictionary of Gardening* states that "this pest attacks the young shoots of plants, choosing the axil of a leaf for its abode, and so damaging the shoot in some cases as to cause it to die or become malformed." The following remedies, besides frequent syringing with clear water, are recommended :—

Tobacco Liquid.—To a gallon of water add 1 oz. of soft soap, and when thoroughly dissolved mix a tablespoonful of Corry and Soper's nicotine, well syringing the plants. This is best applied lukewarm, and then well washed off with clean water in about an hour.

Quassia.—Steep $\frac{1}{4}$ lb. quassia chips in a gallon of boiling water, and when cold add about the same quantity of water. This should be applied with a syringe and not washed off afterwards. It renders the stems of the plants nauseous, but does not injure them.

The "cuckoo spit" is considered by some naturalists to be a protective device, but, according to Dr Sharp, the larvæ are a favourite food with certain Hymenoptera, which pick them out and carry them off to store them as provision for their own larvæ. They are devoured also by many of the smaller insectivorous birds, and, as remarked by several correspondents, are swallowed by young Pheasants. The conclusion, however, at which one writer arrives is probably erroneous. He states that several of his young Pheasants have shown symptoms of a

disease similar to gapes, which he is almost sure comes from swallowing "cuckoo spit" off the grass, for he has often seen them pecking at it, and he adds that if a young Pheasant thus affected be held head downwards, a liquid exactly like "cuckoo spit" will run out of its mouth.

Now, in the first place, the insect food which is so much sought after by small passerine birds is not likely to prove injurious to young gallinaceous birds of any kind—which swallow the "cuckoo spit" more for the moisture than for the very small larva which it envelops; and, in the next place, the frothy exudation from the windpipe happens to be a symptom of gapes. This complaint arises from the presence in the trachæa of a number of small red worms, known as *Syngamus trachealis*, provoking a spasmodic gasping in the effort to prevent suffocation, and a salivary exudation resulting from the irritation of the mucous membrane, caused by the attachment of the parasite. If the "cuckoo" spit were acid or astringent in its effects it would be distasteful to such delicate little birds as the Willow Wren, Whitethroats, and Garden Warbler, which swallow it, and would affect them in the same way as it is supposed to affect young Pheasants. It is probably neutral and harmless in its effects.

What, then, it may be asked, is the connection between the insect and the Cuckoo, and why should the frothy investment of the larva be designated "cuckoo spit"? There is, in fact, no connection between the two. The notion rests upon mere fable, the country people asserting that the Cuckoo

when it arrives in spring ejects the frothy spittle on the leaves, and that the larvæ found therein are Cuckoos in embryo. This popular myth may be traced in many parts of the Continent where our "cuckoo spit" is the *kukuks-specichel* of the Germans, the Swiss *guggerspeu*, Danish *giogespyt*, Norwegian *trold-kiaringspye*, and French *crachat de coucou*. The names "frog spit" and "froghopper," as above hinted, have been suggested by the remarkable jumping power of the active larva.

The folk-lore of the Cuckoo is almost inexhaustible. Mr Hardy has compiled an interesting store of information on this subject in his "Popular History of the Cuckoo," published in the second part of the *Folk-lore Record*. The reader may also be referred to Mannhardt's learned paper in the *Zeitschrift für Deutsche Mythologie*, vol. iii., pp. 209-298.

SNAKES SHELTERING THEIR YOUNG

THE question "whether snakes, in time of danger, offer their young a temporary refuge in their throats, whence they emerge when the danger is past," has long given rise to controversy which from time to time we are accustomed to see revived. The popular belief in this alleged habit is of considerable antiquity, and a number of authors might be named who have mentioned or made allusion to it. Not to go beyond English writers, however, I may refer to Spenser (*Faerie Queene*, 1590, canto i., 14, 15, 22, 25) and Sir Thomas Browne, the well-known physician of Charles II.'s time, who, in his *Enquiries into Vulgar and Common Errors*, 1646, remarks: "The young ones will, upon any fright, for protection, run into the belly of the dam; for then the old one receives them in at her mouth, which way, the fright being past, they will return again; which is a peculiar way of refuge, and, although it seems strange, is avowed by frequent experience and undeniable testimony."

Izaak Walton, also, in his *Complete Angler*, mentions the common snake, which "does breed her young alive, which she does not then forsake, but bides with them; and in case of danger will take them all into her mouth, and swim away from

any apprehended danger, and then let them out again when she thinks all danger to be past. These be accidents," he says, "that we anglers sometimes see, and often talk of."

In the case of the English Adder, many instances have been reported in which the young were seen to enter the parent's mouth, and either to leave it when unmolested, or to be found in the æsophagus when the parent was killed. One of the best cases of this kind is recorded in *The Zoologist* for 1882 (p. 394), and is attested by three eye-witnesses, who append their signatures. It is as follows:—

"When shooting on Mr Lenox's moor, near Newton Stewart, in Wigtownshire, one of us discovered an Adder coiled up on a sunny bank on the moor. Upon his calling to the others of us, we all gathered round, and we then saw the Adder, which by this time had been disturbed, with several young adders round her. We then distinctly saw her open her mouth and allow the young to crawl down her throat, after which she was killed by having her head crushed with the heel of a shooting boot. Having seen the young go down her throat, and being still able to see the movements of them inside her, one of us cut off her head, and some of the young thereupon crawled out of that end of the body. We then laid the body open through its entire length, and found more young adders, which were quite able to strike at the point of a stick when irritated by it. We all distinctly remember the above circumstances, and are quite certain that not only did the young adders first crawl down their

mother's throat, but also came out again from the head end of the body after the head itself had been cut off. We are quite certain that these were in the gullet, and not *in utero*. Until quite recently we were not aware that it was otherwise than an admitted fact that adders swallow their young in a moment of apparent danger, or we should have taken the necessary steps at the time for preserving the bodies of the mother and her young.

"Signed) GEORGE A. ST CROIX ROSE.
"B. LANCASTER ROSE.
"GEO. LENNOX LENOX.

"RAYNERS, PENN, BUCKS, *September* 1882."

On December 17, 1878, Mr J. H. Gurney, Sen., wrote :—

"An old shepherd at Cossey, named Galley, once found a large Viper lying with her young ones near her, one of which ran down her throat on his approach, followed by a second, which, however, could only get partly down and then backed out again. Thereupon he killed the Viper, and found in the anterior portion of the gullet the young one he had first seen creep down, and just below it a newly swallowed mouse, which blocked the passage, so that there was only room for one young one to take refuge between the mouse and the viper's mouth."[1]

In August 1886 the late Mr J. C. Mansel Pleydell of Whatcombe, near Blandford, wrote :—

"The attention of a woodman in my employ

[1] *Trans. Norfolk Nat. Soc.*, ii. p. 614.

was attracted by a hissing noise at his feet. On looking down he saw a large Viper lying distended in a cart rut, in the act of receiving five young vipers into its mouth, which he distinctly saw the reptile open wide before the first of the five crawled in. It was immediately despatched, and on cutting the body open, the woodman found the young ones alive, and wriggling some distance down, and still further towards the posterior end, an undigested shrew mouse."

In November 1895 Mr Pleydell again wrote :—

"I consider there can be no further testimony needed to substantiate the long-contested question whether the Adder swallows her young in time of danger than that of Charles Joyce of Winterbourne, Houghton, Dorset. An Adder was seen by Joyce to lower her head, which had been for some time in an erect position, and after resting the lower jaw on the ground, she deliberately opened her mouth and received her offspring, thirteen in number. With thoughtful precaution, after killing her, he tied a string round her throat and brought the reptile home, and in the presence of my tenant he liberated the thirteen young from the dead body of the old one, as lively as when they entered her mouth some hours previously—a proof that they had not entered the actual stomach, otherwise digestion would surely have commenced its disintegrating work." This, however, would not necessarily be the case, for it has been ascertained by experiment that the gastric fluid acts much more slowly upon living tissue than upon dead prey ; thus the temporary retention of

young adders in the stomach of the parent would not necessarily be fatal to them as supposed.[1]

In 1903, on June 16th, I was strolling through Kentish woodlands at Orlestone, near Ashford, in

THE ADDER OR VIPER.

company with Mr R. J. Balston. His head keeper, named Stickles, informed us that he had lately disturbed an Adder with her young ones; that he saw them enter the parent's mouth; that he killed

[1] See Putnam, *American Naturalist*, vol. ii., p. 133.

the parent, and that on holding her up *by the tail* and squeezing the body *downwards towards the head* the young were pressed out of the mouth and fell among the herbage. He had never heard of the offer of a reward for an Adder killed after swallowing her young and with mouth tied up to prevent their escape. His story was confirmed by another keeper who had also witnessed the incident.

Although observations of this kind, more or less circumstantial, have been usually made in the case of the Adder or Viper—I prefer the name adder for its good old English origin (A.S. *nædre*, seen in nether and natterjack)—similar observations have been reported of many other species of snake; so many, indeed, that it seems improbable that every one of them could have been founded on error.

Indeed ever since Palisot de Beauvais discovered that the Rattlesnake had the same habit as our Adder a great deal of evidence has accumulated which shows that the habit is common to several American species.

A well-known American zoologist, Dr Brown Goode, has been at the pains to publish all the evidence he could collect on this subject. In the *Proceedings of the American Association for the Advancement of Science*, 1873 (comparable with the Reports of our own British Association), he has an article on the question "Whether Snakes swallow their young."

In reply to his inquiry for evidence, printed in the *American Agriculturist* for February 1873, more than eighty letters were received from persons

in twenty-four different States and Provinces, and altogether 120 letters came into his possession. Sixty-seven witnesses saw the young snakes enter the parent's mouth, twenty-two of these heard the young called by a hiss or sound of rattle, five waited and saw the young reappear, one of them seeing the act repeated several times; three saw young ones issue from the old one's mouth, and thirty-six of those who saw the young enter the mouth found them there on killing the parent.

Of these observations thirty-four relate to *Eutænia sirtalis* and *E. saurita* (the Garter and Ribbon Snakes), seventeen refer to the Water Snake (*Tropidonotus sipedon*), nine to the Rattlesnake, two to the Copperhead, three to the Moccasin, one to the Massasanga (*Crotalus tergeminus*), one to the Blowing Adder (*Heterodon platyrhynchus*), and three to the Mountain Black Snake (*Coluber alleghaniensis*).

The writer believes the case proved—and I must say I am disposed to agree with him—proved, that is to say, by the accumulated testimony of eye-witnesses, and many a man has been hanged upon no better evidence. It may be urged that this is not strict scientific proof, nor would it be so if double the number of observers had stated what they believed they had seen. It would, of course, have been far more convincing if any one of them, after seeing the young adders enter the parent's mouth, had slipped a noose over the head of the latter, and imprisoned them until the parent was killed, and the young liberated from the œsophagus in the

presence of some impartial referee. But this has been done, as above mentioned, in this country, and should convince those who are still sceptical on the subject, and who are unable to see in such action a remarkable provision of Nature for protecting the young in time of danger.

Amongst the mammalia, the young in the majority of cases are carried by the mouth, as dogs carry their puppies and cats their kittens; or on the back, as with apes and monkeys; or clinging to them in front, as in the case of bats; or in pouches, as with all the marsupial animals. Amongst birds, the young are transported by their parents with the aid of the beak, as with the Wild Duck; or feet, as in the case of the Woodcock and Snipe; or on the back, as with the cliff-building guillemots and razor-bills and the more familiar Swan; or even under the wing, as happens with birds like grebes, which escape by diving, and take their young with them.

In all these cases we see some special provision for insuring the safety of the young in time of danger. None of these methods is available for young snakes. If they are to be protected at all by their parents, they must be temporarily taken into the mouth and œsophagus. And I see nothing impossible or absurd in such a process. Not only has it been demonstrated (*Zoologist*, Sept. 1900) that on anatomical grounds it is quite feasible, but there is the analogous case of the Common Lizard (*Zooteca vivipara*), which while kept in confinement has been seen repeatedly to receive the young into its mouth when danger threatened. It is not more strange

that this should happen than that the female Cuckoo should carry her egg in her bill in order to place it in the nest of a small bird which would be otherwise inaccessible; or that the young unfledged Cuckoo should be able to hoist its foster brethren out of the nest; yet both these facts have been established by the testimony of unimpeachable witnesses.

When Gilbert White wrote to Pennant, in September 1770, on the subject of woodcocks carrying their young—a fact which he was evidently inclined to doubt, notwithstanding the assertion made by Scopoli in a work then lately published—he penned a sentence which I have long since committed to memory. "Candour," he says, "forbids me to say absolutely that any fact is false because I have never been witness to such a fact." This, it seems to me, in the absence of strict scientific proof, is a good mental attitude to assume on the subject of this or any other discussion.

THE MOLE CRICKET

ONE of the most remarkable, yet least familiar, of British insects is the Mole Cricket (*Gryllotalpa vulgaris*). To professed entomologists no doubt it is familiar enough, but to the majority of people, even to those residing in the country, and professing a taste for natural history, it is scarcely known except by name, and from the figures of it which have been from time to time published. The reason for this no doubt is to be found in the subterranean nature of its haunts; for it derives its name from the analogy which it affords both in structure and habits with the Mole. Belonging to the large and widely-distributed order Orthoptera—or straight-winged insects—which comprises the cockroaches, stick and leaf insects, grasshoppers, crickets, and locusts, the genus *Gryllotalpa* has representatives in almost all parts of the world, China, Java, Australia, New Guinea, North and South America, and the West Indies, each species being peculiar to the country in which it resides. The so-called Mole Cricket of India, described and figured by Lockwood[1] belongs to quite another genus (*Schizodactylus monstrosus*), and is remarkable for the great length of the wing cases, which extend

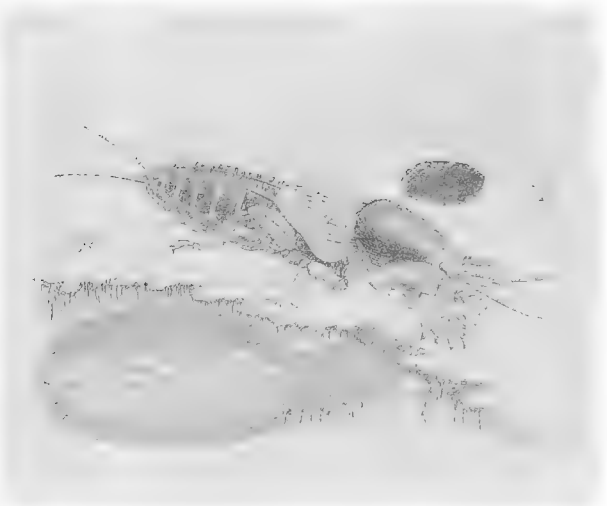
[1] *Natural History, Sport and Travel in Bengal*, 1878, p. 209.

far beyond the extremity of the body, and the tips of which when not in use are rolled up in a coil, the basal part being horizontal except at the edges.

It is of interest to note in the insects belonging to the above-mentioned families the various modifications of structure as correlated with habits. Thus, while the wings are large and membranous, strongly reticulated and folded longitudinally while at rest, the legs are long and stout, raptorial in the *Mantidæ*, cursorial in the cockroaches, ambulatorial in the leaf-insects, saltatorial in the grasshoppers and locusts, and fossorial in the mole crickets. Some, like the cockroaches, are omnivorous; others, like the *Mantidæ*, carnivorous; but the majority are herbivorous, and, as the less nutritious the food the greater the supply needed, it follows that some of the species, like the locusts, being gregarious and of large size, are amongst the most voracious and destructive of all insects.

The Mole Cricket in structure is admirably formed for digging. Of a dark brown colour, which harmonises with the soil and favours concealment, the body is almost cylindrical, yet vertically compressed; the forelegs short, but very strong and broad, and, as in the case of the Mole, directed obliquely outward. With the aid of these curiously-shaped fore limbs it burrows like a Mole, as Gilbert White observed, "raising a ridge as it proceeds, but seldom throwing up hillocks," though its muscular strength is so great, that, according to Rösel—incredible as it may appear—it is able to

exert a force equal to a counterpoise of 2 lb. or 3 lb. It begins by sinking a vertical shaft, from which, a little below the surface, it drives horizontal galleries on either side. These galleries sometimes extend a considerable distance, the little operator working through all the roots that come in its way, and as it prefers garden ground or other made soil,



THE MOLE CRICKET AT WORK.

it often does a great deal of damage. As it is found chiefly in peaty soil mixed with sand or clay, as well as in soil which has acquired some consistency by the application of manure, its presence may be regarded as somewhat local. Gilbert White found it haunting moist meadows, the sides of ponds and banks of streams, and performing all its functions in a swampy, wet soil. The Welsh

antiquary Lhwyd, writing to John Ray from Oxford, December 12, 1693, says :—

"I observed near Kidwelly, in Caermarthenshire, this last summer, that the *Gryllotalpæ* live there in the sea-lands that are covered every tide. I brought one of them with me, and cannot find that they differ from those of the Midland counties. In Wales they are called Rhing y Lês, *i.e.*, *Stridor æstivitatis.* (Derham, *Philosophical Letters*, 1718, p. 273.)

Early in the year it leaves its winter hiding-place and commences to tunnel near the surface. A nest is formed in a cup-shaped cavity about $1\frac{1}{2}$ in. in diameter, the surface of which is flattened by pressure. In this the eggs, between 200 and 300, and of a dull yellow colour, are laid in clusters. The young crawl out in spring, and are at first wingless. They are of a dirty white colour at birth, but gradually turn brown. Undergoing a succession of moults before they reach the adult stage, they grow pretty fast, and begin to lead an independent life after the second moult. A third moult takes place in autumn (in October and November), when, still in a wingless condition, they hide, and do not moult again till the following April or May, when the wing cases appear; while after the fifth moult, in May or June, the Mole Cricket becomes an adult insect able to fly, and capable of reproducing its species. These details of its life history are given by a Dutch naturalist, Dr Ritzema Bos, in his treatise on *Agricultural Zoology*, of which a translation by Professor

Ainsworth Davis appeared in 1894. It seems clear, however, from an examination of the works of previous writers on this insect, that the Dutch professor derived his information, not from personal investigation of the subject, but from the observa-

THE MOLE CRICKET ON THE WING.

tions of Rösel, Latreille, de Saussure, and other continental authors, to some of whom Westwood also was admittedly indebted when penning his remarks on the Mole Cricket in his *Introduction to the Classification of Insects.*

No account of this species would be complete without mention of the singular noise which it

produces, and which cannot be better described than in the words of Gilbert White :—

"In fine weather about the middle of April, and just at the close of day, they begin to solace themselves with a low, dull, jarring note, continued for a long time without interruption, and not unlike the chattering of the Fern Owl or Goat-sucker, but more inward."

The sound of many together may be heard from a considerable distance. It is somewhat curious that the late Miss Ormerod in her *Manual of Injurious Insects* makes no mention of the Mole Cricket, an omission due probably to the fact that she never had an opportunity of personally studying it; otherwise she would certainly have had much to tell concerning it; for that it is an "injurious insect" there can be no doubt.

A French naturalist, M. Leféburier, published a series of observations to show that it is upon subterraneous insects, and not upon plants that the Mole Cricket feeds, and Dr Kidd, who wrote a long essay on the anatomy of this species,[1] states that he repeatedly found on dissection the chitinous and indigestible parts of insects within the stomach. Gould, the American entomologist, fed a Mole Cricket for some months on ants.

Latreille remarked that it cuts or detaches the roots of plants "not so much for the purpose of feeding on them, as in order to force a passage through them, for it feeds apparently on insects or worms." On the other hand, the observations

[1] *Phil. Mag. and Journ.*, 1825, pp. 401-428, with illustrations.

of another French naturalist, Turpin, certainly prove that the Mole Cricket is herbivorous. Dr Kidd found that its digestive organs more closely resemble those of a graminivorous bird than of any other animal, an opinion shared by Professor Owen, and, that of all kinds of vegetable food, it prefers the potato. Gilbert White, too, remarked: "If they take to the kitchen garden, they occasion great damage among the plants and roots by destroying whole beds of cabbages, young legumes, and flowers." Some years ago a Mole Cricket found in South America and the West Indies (*Gryllotalpa didactyla*) was reported to have committed great ravages upon the young sugar canes, resulting in considerable loss to the planters.

Dr Ritzema Bos says the Mole Cricket "gnaws the roots of all kinds of plants, and often effects great damage in this way." It is harmful also on account of its passages, which are formed close to the surface. In this way it lifts young plants out of the soil, while older plants are killed both by its gnawing and digging. Such plants can often be pulled up by grasping the leaves, and they will always wither in the place where the nest is found.

I have quite recently received confirmation of some of these charges from a correspondent, who inquires what is the remedy for these depredations, or how they are to be prevented. I remember to have read many years ago the recipe of a M. Barthe, who recommended that a few drops of salad oil and

then water should be poured into the tunnel so as not to overflow, and that the Mole Cricket would then evacuate the nest and die. This, however, assuming the plan to be efficacious, presupposes that the operator will have both the patience and the luck to find the openings to the nests, and for this reason, if for no other, the process is likely to be a slow one. The author of *Agricultural Zoology*, above referred to, recommends the destruction of the nests in June to begin with, and to be continued later. "In those parts of a field" (he says) "where the plants are yellow or withered in a large circular patch, a yard or so in diameter, the nest may be felt for with the fingers and carefully lifted up so that the eggs do not fall out." Mole Crickets may also be caught by means of flower-pots. The apertures in the bottoms of these are stopped with corks, and they are then sunk in the soil until the rims are on a level with the passages; they thus serve as pitfalls from which the Mole Crickets are unable to escape. Another plan is to place little heaps of horse-dung on the ground in winter, when the Mole Cricket will creep into them for the sake of warmth, and may then be collected and killed. They appear to be very sensitive to cold, and a severe and dry winter will cause considerable mortality amongst them. Much drought in summer and continuous wet weather are also invariably unfavourable.

In addition to this, they have their natural enemies, amongst which may be mentioned moles, rooks, starlings, and the larger carnivorous beetles. Those, therefore, who would wage warfare against

rooks and starlings should not overlook the good service which they render by ridding the land of Mole Crickets, Wireworms, the larvæ of Cockchafers and Craneflies, as well as couch grass, the succulent roots of which are constantly being torn up and devoured by rooks, as proved by the fragments found in the pellets which they eject of the indigestible portions of their food.

The accompanying figure of the Mole Cricket at rest is reproduced from a woodcut which illustrates Gilbert White's remarks on this insect in the edition of his work by the Rev. Leonard Jenyns. The second figure is from *Cassell's Natural History*, edited by the late Prof. Martin Duncan (vol. vi. p. 124), where a brief account by the late W. S. Dallas of the more important peculiarities of its structure may be found.

THE SHAMROCK

THE seventeenth of March always brings to mind a pretty custom and an ancient legend. Caleb Threlkald, in his *Synopsis Stirpium Hibernicarum* (1727), writing of the Shamrock, says: "This plant is worn by the people in their hats upon the 17th day of March yearly, which is called St Patrick's day," and the custom, a very old one, is still observed by Irish people throughout the land, for the Shamrock is their national emblem as well as the emblem of their faith. The oft-repeated incident of its use by St Patrick to illustrate the doctrine of the Trinity is perhaps the most popularly known episode of his life, and yet it is purely traditional, for evidence on the point there is none. To St Patrick may well be applied the words of a celebrated divine, who, preaching on a saint's day, exhorted his hearers to "consider first we know little or nothing of this saint," while many of the statements which have been made concerning him are chiefly conjectural, and some of them contradictory. According to certain historians, he was born at the end of the third century near Glastonbury in Somersetshire; by others he is asserted to have been born in Scotland in a village at the mouth of the Clyde, while a third legend makes

him a native of Tours and a nephew of St Martin. About few other saints does so much uncertainty prevail—even the year and day of his birth are matters of dispute.

The festival of St Patrick, as every one knows, is observed throughout Ireland on March 17, but whether that is the date of his birth, or the day of his death, no one apparently has been able to decide. If Samuel Lover may be credited with any knowledge of the subject, the 17th of the month is more likely to have been the date of the saint's death, for in his humorous lines on "St Patrick's Birthday," he wrote :—

> "On the eighth day of March it was, some people say,
> That St Patrick at midnight he first saw the day ;
> While others declare 'twas the ninth he was born,
> And 'twas all a mistake between midnight and morn."

But we are at present concerned, not so much with the life of St Patrick and the date of his birth or death, as with the natural history of the little three-leaved plant with which his name is indissolubly connected. Here again authorities differ. What the original Shamrock was is a question now impossible to decide. We can only consider probabilities and long usage. Turning to the celebrated *Herbal* of John Gerard, published in 1597, we find his opinion to be that the true Shamrock is the common Meadow Clover (*Trifolium pratense*). The equally celebrated English botanist, John Ray, was of the same opinion. More than ten years, however, before Gerard's work appeared, Stanihurst in Holinshed's *Chronicle* (1586), wrote of "water-

cresses, which they tearme shamrocks, roots, and other herbs they feed upon"; and Campion (*Hist. Ireland*), writing in 1581, refers to "shamrocks, watercresses, rootes," which looks as if the Shamrock in Ireland was at one time esteemed as a salad, or, at all events, was eaten when no better vegetable food could be obtained. Fynes Morison says of the Irish peasantry that "they willingly eate the herbe shamrock, being of a sharpe taste;" and Spenser, referring to the dire extremities to which the people were reduced by the wars of Munster, remarked "if they found a plot of watercresses or shamrocks, there they flocked as to a feast for a time."

The notion that the Shamrock (whatever its botanical name) was used as a salad probably gave rise to the supposition that the plant was the Wood-sorrell (*Oxalis acetosella*), and in some parts of the country (in Oxfordshire, for example), this plant is known as the Shamrock. In Prior's *Popular Names of British Plants* (third ed. 1879), Shamrock is one of the local names given to *Medicago lupulina*. But since in the absence of direct evidence on the point we can only fall back on tradition and local custom, it becomes a matter of interest to discover what is the plant which is generally regarded as the Shamrock, by the people of Ireland; the traditional Shamrock, in fact, pointed out to children by their parents in every succeeding generation. Statistics on this point have been collected, but different conclusions have been arrived at. Dr Prior, who derives the word from the Erse *seamrog*, compounded of *seamar*, trefoil, and *og*, little, states that

the plants that for a long time past have been regarded by the Irish as the true Shamrock, and worn by them on St Patrick's day, are the Black Nonsuch (*Medicago lupulina*) and the Dutch Clover; and these, but chiefly and almost exclusively the first, are sold for the national badge in Covent Garden as well as in Dublin. Intermixed with them are several other species of the same two genera (*Medicago* and *Trifolium*), but no plant of any other genus. Of late years, however, certain writers have adopted Mr Bicheno's notion, and advocated the claims of the Wood-sorrel (*Oxalis acetosella*) but certainly without the smallest shadow of reason. As to the theory of the watercress, Dr Prior points out that its leaf, not being trifoliate, could not have been used by St Patrick to illustrate the doctrine of the Trinity. But this story is of comparatively modern date, and is not to be found in any life of the saint. The late Dr Moore, of Dublin, a well-known Irish botanist, agreed with Dr Prior that the plant which for many years has been recognised in Ireland as the true Shamrock is *Medicago lupulina*.

On the other hand, Messrs Britten and Holland in their excellent *Dictionary of English Plant Names* (1878-1886) state that at the present day *Trifolium minus, L.*, is the plant most in repute as the true Shamrock. It is this species, they say, which forms most of the Shamrock sold in Covent Garden on St Patrick's Day, and in Ireland it is used as such in the counties of Antrim, Down, Meath, Fermanagh, Dublin, Wicklow, Carlow,

Westmeath, Wexford, Limerick, Waterford, Cork and Kerry. *Medicago lupulina* occasionally takes its place in London, and, according to the *Cybele Hibernica* (p. 73) is also sold as such in Dublin. Probably the conclusion at which one must arrive (from the overwhelming evidence of the use of *Trifolium minus* throughout Ireland) is that this plant, so far as can now be ascertained, is the true Shamrock, but that other plants occasionally do duty for it.

Mr Nathaniel Colgan, one of the most accurate of Irish Botanists, in his *Flora of the County Dublin* (1904), p. 307, says that White clover (*Trifolium repens*) and the Lesser Yellow clover (*T. dubium*) are almost equally in favour as the Irish national badge. Mr Colgan uses Sibthorpe's name, *T. dubium*, instead of *T. minus*, of Smith, for the Lesser Yellow clover.

THE MISTLETOE AS FOOD FOR BIRDS

It is a popular notion that the only species of wild bird which feeds on the berries of the Mistletoe is the Mistletoe Thrush. Professor Newton, in the fourth edition of Yarrell's *British Birds* (vol. i. p. 620), writes: "Its food consists of various slugs and snails, some fruit in the season, and (when they can be found) berries of all sorts, including those of the Mistletoe, whence it derives its most common name—a fact known to Aristotle."

That the Song Thrush does not follow its example in this respect is to be inferred from the absence of any published evidence to the contrary, and it is scarcely to be doubted in the case of so common a bird, frequenting, as it does, our gardens and copses within easy reach of daily observation, that did it, even occasionally, take the berries of the Mistletoe, the fact could hardly fail to have been noticed by observant naturalists. The same may be said of the Blackbird and Ring Ouzel, though both of these birds feed regularly on the berries of the yew and mountain ash in autumn, and of the ivy in spring.

It is otherwise with the Fieldfare and Redwing, for, although it is perhaps not generally known, there is on record the evidence of an eye-witness

that both these thrushes do at least occasionally—perhaps only in severe weather when other food fails them—feed upon the viscous berries of the plant in question.

So long ago as 1842, the late Edwin Lees, of Worcester, in a little volume abounding with original observations on natural history, and quaintly entitled *The Botanical Looker-out among the Wild Flowers of England and Wales*, remarks on page 10:—

"As the Mistletoe derives no nutriment from the earth, and has therefore no necessity to fall to the ground, its dissemination is wisely entrusted to birds, which are tempted to feed on its white berries when other supplies fail, and in cleaning their bills on the rind of various trees frequented by them, are sure to leave behind a few of the clammy seeds to perpetuate the continuance of the parasite. It is not improbable also, that the seeds pass through the bodies of birds uninjured, as stated by old writers, and are even benefited by the forward tendency thus given them to earlier germination."

To these general remarks he adds the following precise observations, to which, as pertinent to my inquiry, I desire to direct particular attention. He says (p. 11), and the statement is repeated in the second edition of his book (1851, p. 44):—

"Birds of the Thrush family chiefly delight in the Mistletoe berries, especially the Fieldfares and Redwings; and as these generally fly in flocks, keeping in one line of direction, it is not unusual to see a corresponding line of Mistletoe bushes

ranging across the country for a long distance. I have followed such a line till its continuity was broken by a river, when I have almost invariably found that its course was again continued from the nearest tree that presented itself on the opposite side of the water. I remember once observing a long line of hedge overtopped by straggling hawthorns and scrubby maple (the author lived in Worcestershire) every one of which were hung with Mistletoe; but, curiously enough, an oak in the centre of the hedge was passed over, though the parasite was luxuriant on a hawthorn close under the umbrage of the oak."

The trees upon which this author had actually seen Mistletoe growing are stated (*op cit.*, pp. 16, 17) to have been apple, pear, lime, hawthorn, sycamore, maple, mountain ash (uncommon), white beam, hazel (very rarely), elm (in one locality), *Robinia pseud-acacia* (local in shrubberies), willow, ash, medlar (once), aspen (very rarely), and black poplar, so excessively abundant in almost all recent plantations in Worcestershire as literally to bend some of the trees towards the ground. As to its occurrence on the oak, which the author considered to be "a very great rarity" (he himself having seen but one such case in Earl Somers's park at Eastnor, near Ledbury), he thought its absence from that tree might arise partly from the Romans having destroyed all the Druidical Mistletoe, it being remarkable that although so many old oaks are recorded as existing in this country, perhaps upwards of one thousand years old, not one bears Mistletoe.

But if it be the fact that wandering thrushes, in cleansing their bills upon the rind of trees frequented by them, leave behind them some of the clammy seeds to perpetuate the continuance of the parasite, and it is no uncommon thing to see both Fieldfares and Redwings perched upon oaks, we may perhaps infer that the rind of the oak, unlike that of the other trees mentioned, does not from its hard dry nature afford a suitable *nidus* for the germination of the seed. At anyrate, the fact remains that the author quoted had seen both Fieldfares and Redwings feeding in winter on the seeds of the Mistletoe, and in directing attention to his statement on this point, which appears to have been generally overlooked, it might be well to inquire, when these birds are with us as winter visitors, whether other naturalists from their own observations are able to confirm his remarks.

The authors of *The Country Month by Month*, (J. A. Owen and G. S. Boulger), alluding to the observations by Lees, without mentioning the volume in which they were published, add nothing in confirmation of his statement. They would have done well, perhaps, to have quoted what he has to say on the derivation of the word "Mistletoe," since his explanation has as much to recommend it as their own statement that "while *tan* or *teinn*, the old spelling of the last syllable, admittedly signifies 'a twig,' the *mistel* (*sic*) is connected with *mist* in the sense of winter gloom or fog." Lees at least quotes authorities for his view. He says :—

"There is an obsolete old English word, *mistion*, which is employed even in the writings of Boyle, and this is defined in Dr Johnson's original folio edition of his Dictionary as "the state of being mingled." Now, this is truly the state of our plant, which is *intermingled* with the foliage of various trees, and mixes up their juices with its own, and is now, indeed, in rural places still simply called *mistle.* If to this we add the old English *tod* or *toe*, signifying 'bush,' we have at once the derivation, meaning the mingled or compound bush."

This was written in 1842, and seems generally to have escaped notice, or at least criticism. Professor Skeat, in his valuable *Etymological Dictionary of the English Language*, says nothing of "the old English *tod* or *toe*," but explains the word as compounded of A.S. *mistel*, which could be used alone to mean "Mistletoe," and A.S. *tan*, Icel. *teinn*, a twig. He adds that the word *mistel* is clearly a mere diminution of *mist*, which in E. means "vapour" or "fog," and in A.S. "gloom," though the reason for the name is not quite clear.

With this explanation from such an authority on English etymology we must rest content, and it is practically indorsed by Professor Newton, who in a footnote (p. 260) to his article on the Mistletoe Thrush above quoted, after giving this derivation with some amplification, relies upon it to justify his opinion that the proper name of the bird should be written in full "Mistletoe Thrush," and not as commonly "Missel Thrush."

BIRD-LIFE IN KENSINGTON GARDENS

To the naturalist who is cooped up in London for many months in the year it is sometimes refreshing to take an early morning walk through one of the London parks and study what little bit of nature still remains in the heart of a great city. It is still possible to find spots here and there which are entirely out of sight of houses, and where, walking on green turf and looking upward through the branches of venerable elms or plane trees, one gets a glimpse of country sky, and hears now and then the note of some country bird, a temporary sojourner like oneself in London.

Nowhere, perhaps, is this little bit of *rus in urbe* more striking than in Kensington Gardens. Here may be found some really charming glades, bordered by fine old trees, which in summer cast a grateful shade over the turf below. The enjoyment to be derived from a contemplation of these glades will depend upon the time of year at which we walk there. If we select the season when rooks with noisy "caws" are busy gathering sticks to repair their old nests, and the spring notes of thrushes, blackbirds, and tits fall pleasantly upon the ear, we may fancy ourselves miles away in the country, instead of in the very middle of London. It would be difficult to say how many species of birds may

be regarded as permanently resident in Kensington Gardens, but it is certain that a goodly list might be made of those which have been periodically observed there. Rooks and Jackdaws, from their size, are amongst the most conspicuous. The latter often quit the park for the house-tops, and before the daily traffic has commenced may be seen hovering about the high road, occasionally swooping down to carry off the oats dropped from the nosebag of the cab-horses. There was a time when the Magpie nested in St James's Park, as did the Raven and Kite in Hyde Park; but those days have long since passed away, and perhaps no observation of the Magpie in Kensington Gardens has been made, or at least recorded, since Yarrell, in his *History of British Birds*, wrote that he had himself once counted twenty-three there. This statement, to many persons, may seem almost incredible; but not only does the good authority for it forbid us to doubt it, but it is a fact well known to ornithologists that magpies in autumn and winter assemble in flocks and roost together in plantations, as many as thirty or forty having been counted at one time.

From its general similarity to a Rook, when seen at a distance, the Carrion Crow probably often escapes notice. It is nevertheless a constant frequenter of Kensington Gardens, and in the summer of 1887 a pair had a nest there from which the young were duly hatched. During the time the young were being reared, the old birds might be seen close to the water's edge foraging for food,

and numbers of young ducks did they kill and carry off. The broods gradually dwindled down from ten or a dozen to two or three; and one old duck in particular, which had hatched off all her eggs safely, no sooner had them afloat than the crows began to molest them, and she lost all but one. So long as they were swimming about they were safe, but as soon as they landed, and got a little way from the edge of the water, down would come one of the crows with a long "stoop" like a hawk, and cut off the retreat of some luckless duckling before it could regain the water, and notwithstanding a charge from the old duck, who would bravely rush to the rescue. The nest of this duck was in a singular position. Close to the basins in Kensington Gardens, as everybody knows, there stands a huge trunk of what was once a fine elm tree. It is 22 feet in height, and now serves for no other purpose apparently than to hang the Royal Humane Society's drag on. At the top of this great stump the duck referred to had her nest, and at this height from the ground fourteen ducklings were hatched. How the mother would get them down was a problem. It was thought she might perhaps take them one by one in her bill, or, like the guillemot and other cliff birds, carry them singly in the hollow of her back between the uplifted wings, skimming down to the water with them; but one of the park-keepers, who was desired to watch, assured the writer that the old duck "called them off," and that they took "headers" one by one on to the gravel path below. He fully

expected they would be killed by the fall; but, after tumbling over on their sides, righted themselves, and waddled down to the water, apparently none the worse. They seemed as collapsible as indiarubber balls.

While watching the Crows at the water's edge in the early morning, one might often see Woodpigeons come down to drink. There are nests in Kensington Gardens every summer, and the owners would sometimes suffer a tolerably near approach; so quickly do birds discover when they are in safe quarters. It is curious that none of the numerous flocks of house pigeons in London are ever to be seen feeding out in the parks. In the country it is quite a common occurrence to see pigeons out in the fields a long way from the farms; and one would have supposed that in London the green grass of the parks would have proved attractive; but probably the birds are too well fed to make it necessary to wander far from where they habitually roost. Several years ago, when there were more trees standing, and a good many old ones amongst them, Woodpeckers of three sorts might be seen. Yarrell states that the Greater Spotted Woodpecker used to breed in Kensington Gardens, but it has not been known to do so of late years. This bird is now less often seen than the Lesser Spotted Woodpecker, which is the commoner species round London, and which was detected in Kensington Gardens in May 1878—possibly since then by other observers. In November 1885 the rarer Green Woodpecker was seen here, and on the 11th of December following

one of these birds—perhaps the same one—was reported to have been seen by a different correspondent, while a third observer reported one in Holland Park. That woodpeckers are not visible more frequently is due perhaps to their peculiar habit of dodging round the far side of a tree at the approach of an intruder, and on this account it is remarkable how difficult it is to catch sight of one even in wooded parts of the country where they are perhaps not uncommon.

The Nuthatch also is almost as clever in keeping out of sight, but its loud twittering note often betrays it, and the writer has several times heard and seen it in Kensington Gardens. Tits of two kinds are tolerably common there, and apparently resident throughout the year. These are the Coal Tit and the Blue Tit—the former sombre enough at all times, the latter looking very soot-begrimed from contact with the smoked branches of the London trees, so different from the brightly-coloured tits one meets with in the country. Doubtless they find convenient nesting-places in holes in some of the old trees, many of which are tenanted by Starlings, which are almost always to be seen in the gardens.

Amongst other small birds, the Chaffinch is most conspicuous here, although it cannot be called common, and disappears in the winter. It is perhaps commonest in spring, when its loud song is heard, and the flash of white in its wings attracts attention as it springs up from the foot of some old tree at our approach.

In summer, one of the commonest small birds in Kensington Gardens is the Spotted Flycatcher. Perched upon one of the lower branches of an elm or chestnut, it may be seen darting into the air to catch a passing insect, and returning to the same branch. Should we wander beyond the boundary fence, and saunter into Hyde Park on a bright morning when the summer birds are beginning to arrive, we may see both the Wheatear and the Whinchat in the open ground between the Magazine and the Marble Arch. I have many times seen both these birds there, and on one occasion counted five wheatears in sight at once. Larks also periodically make their appearance on the same ground; but this is beyond the precincts of Kensington Gardens, where there are yet several other birds to note.

The House Martins that skim about over the Serpentine and the Round Pond in summer time, live in Westbourne Terrace and other streets in that neighbourhood, where the writer has seen them visiting their nests as late as the first week of October ministering to the wants of a late brood.

Kingfishers occasionally pay what may be termed "a flying visit" to the Serpentine, and in the summer of 1886 the writer saw one several times at "The Dell," where, in the same summer, two broods of Moorhens were reared. It was very amusing to watch the young birds of the second brood being fed by those of the first brood, not very much bigger than themselves. The Little Grebe, or Dabchick, has been repeatedly seen on

the Round Pond and on the Serpentine. In the autumn there are sometimes a good many there.

Strange as it may seem, the Woodcock has several times been flushed in Kensington Gardens, and may almost be looked upon as an annual winter visitant to the parks and gardens of London. An article by the present writer, entitled "Woodcocks in London," which appeared in *The Field* of February 14, 1885, will convey some idea of the frequency of this bird's visits to the metropolis, and the occasionally remarkable circumstances under which it has been met with. Snipe have been occasionally seen, or picked up dead under gas lights, but the records of their occurrence are not nearly so numerous as those relating to the Woodcock. Even Gulls and Terns are not wanting to complete the picture of bird-life in Kensington Gardens, for at the period of migration in spring and autumn, when these sea-birds are on their way to and from their breeding haunts, they pass over the metropolis and drop down upon the water in the London parks, where they sometimes spend a few days before continuing their journey. The Common and Lesser Terns, the Black-headed Gull, and the Kittiwake have all been detected at various times on these inland waters, affording by their graceful evolutions and snow-white plumage a charming spectacle for sightseers in London.

THE DISAPPEARANCE OF THE KITE

STROLLING into the well-known auction rooms of Mr Stevens in King Street, Covent Garden, where all sorts of natural curiosities are from time to time dispersed, my attention was attracted by a stuffed specimen of the Kite (*Milvus regalis*), which, according to the sale catalogue, was obtained many years ago in Monk's Wood, Huntingdonshire, and had belonged to the late Mr Doubleday, of Epping, a well-known collector of birds.[1] For the naturalist, a more interesting souvenir of the past could not well be found; for Monk's Wood was one of the last-known breeding haunts of this bird in the Midland Counties, and the specimen before me, which from another source I learnt had been received by Mr Doubleday "in the flesh," had no doubt been treasured by its former owner as one of the rarest of British birds. Knowing something of the former history of the Kite as a resident in England, it was perhaps not surprising that I should find myself bidding for so interesting a

[1] Henry Doubleday of Epping died on June 29, 1875, aged sixty-seven, having disposed of his collection of stuffed birds during his lifetime. It was sold by auction at the Cock Hotel, Epping, August 23, 1871. The specimen of the Kite above mentioned, together with an adult female Goshawk, obtained near Yarmouth, formed Lot 85 in the Sale Catalogue and realised £4.

relic of the past, and in less than half an hour I left the room the happy possessor of the bird in question, which I subsequently presented to the Museum of the Essex Field Club.

Contemplating its great forked tail and ample pinions, one's thoughts naturally wandered back to the days when the Royal Kite or Fork-tailed Glead, as it was locally called, was one of the commonest birds in this country. Time was when it was stringently protected as a useful scavenger in great towns, and history tells us how foreigners of note, sufficiently distinguished to have their travels written down, were struck on coming to England with the number and tameness of the kites which they saw here. Thus so long ago as 1465, when Baron von Rozmital, brother to the Queen of Bohemia, journeyed to England, and, travelling by way of Sandwich and Canterbury to London, stood upon old London Bridge, which he described as having buildings upon it throughout its entire length, he was struck with the number of Kites which he saw, to injure which, he was told, was a serious offence. This remark was confirmed somewhat later by the French naturalist, Pierre Belon, (1555). and by Clusius (Charles L'Ecluse), who visited England in 1571, and in a note to his translation of Belon's work observed that it was forbidden to kill these birds, since they collected and devoured the refuse of the street, and even of the river itself.

James I. protected kites for another reason; they furnished the best of flights to his trained Jerfalcons, a sport to which he was much addicted,

and on which he lavished large sums of money. Kite-hawking, indeed, though an expensive amusement by reason of the value of the hawks employed, was long practised by English falconers, even so late as the first quarter of the present century, when the Earl of Orford and Colonel Thornton of Thornville Royal, with the members of the Falconers' Club, used to "range for Kite near Elden Gap" and over Thetford Warren.

Monk's Wood and Alconbury Hill were then the favourite haunts of this bird, and some interesting testimony of its former abundance there is afforded by Colonel Birch Reynardson in his *Reminiscences of a Gentleman Coachman* (1875, p. 74). He says:—

"Within a few miles of Stilton, and between Stilton and Stamford, is a hill called Alconbury Hill. In the days I am writing of (about the year 1824, and from before that time to 1828 or 1829) there used to be in that part of the country an incredible number of Kites—the Fork-tailed Kite, or what in Scotland were called Gleads, the red feathers of whose forked tail were famous for wings of salmon flies. These birds used to be soaring over the road and over a wood called Monk's Wood. In almost every direction (when travelling by the Stamford Regent coach) one used actually to see them sitting in the middle of the road, and on one occasion I remember counting as many as twenty-seven in the air at the same time. The preservation of game, I suppose, has got rid of them, for no such bird is to be seen now; and it is

wonderful how in a few years these birds have become almost extinct throughout England. I have not seen one for at least thirty-six years (*i.e.*, not since 1839).

The late Mr Stevenson, in the first volume of

THE KITE.

his *Birds of Norfolk*, published in 1866, could only write of the Kite in the past tense. In former years, he says, this bird occasionally remained with us to breed, and half a century back used to be rather common in Norfolk. The last of which he had any knowledge was trapped close to its ancient haunt at Croxton, near Thetford, in November 1852. Dr

Churchill Babington has mentioned some more recent instances of the occurrence of the Kite in Norfolk and Suffolk in his volume on the birds of the latter county (1886), but he is compelled to add: "This bird has now become so rare as to be hardly ever seen in the county. Scarcely any specimens have been obtained in the last five-and-twenty years."

In Lincolnshire the Kite, as a resident and breeding species, lingered somewhat longer, a fact which is probably to be attributed to its being still able to find concealment during the nesting season in some of the great woods of that county. Mr Adrian, of Lincoln, informed Professor Newton, in 1864, that Kites in Lincolnshire were then becoming scarcer every year. This he attributed partly to the destruction of the birds, and partly to that of their favourite haunts, by the felling and stubbing of the woods, in two of which 100 acres had been cut down since the beginning of the year, and this in the best locality.

In his account of the Kite published in the fourth edition of Yarrell's *British Birds*, Professor Newton remarks: "There were nests in Lincolnshire until the year 1857, but, owing in a great measure to the cutting down of the woods, it has probably been driven from that locality." Happily this has not proved to be the case. A nest of the Kite was found in Bullington Wood, near Wragby, in that county, in 1870, and there is reason to believe that the species lingered there even a few years longer.

According to Jabez Allies, author of the

Antiquities and Folklore of Worcestershire, in his young days the Kite was well known at Alfrick, about six miles north of Great Malvern :—

"There was a coppice there in which they might often be heard 'mewing,' as the country people called their cry, but guns and persecution drove them away. In 1850 the Kites returned to their old haunts at Alfrick, for at that time the principal house and estate there, called the Grimsend, had fallen into Chancery, and was unoccupied and waste." [1]

In the West of England the Kite must at one time have been common enough. We learn from a good observer in West Gloucestershire, J. L. Knapp, of Thornbury, that in his day (1829) these birds had a habit of roosting in company instead of in pairs, as is the case with most birds of prey. On this point he relates the following curious experience in his *Journal of a Naturalist*:—

"I can confusedly remember a very extraordinary capture of these birds when I was a boy. Roosting one winter evening on some very lofty elms, a fog came on during the night, which froze early in the morning, and fastened the feet of the poor Kites so firmly to the boughs that some adventurous youths brought down, I think, fifteen of them so secured!"

In one point of detail it is probable that the writer was mistaken. It is more likely that the inability of these birds to move was occasioned by

[1] Lees' *Pictures of Nature around the Malvern Hills*, 1856 (p. 17).

the congelation of the moisture upon the wings, which prevented the expansion of the flight feathers; and that such an accident does sometimes occur has been vouched for in the case of Rooks by Gilbert White in his *Natural History of Selborne*,[1] and by Daniel in the Supplement to his *Rural Sports* (p. 636).

The Kite is said to have been common in the neighbourhood of Dartmoor at the end of the last century (Bray's *Tamar and Tavy*, vol. i., p. 346), and the late Mr Rodd, of Penzance, thought that no hawk was better known in the large woodland districts of the central part of Devon when he was a schoolboy at Buckfastleigh. He was born in 1810, and could depose to its nesting in King's Wood, near Holme Chase, on the eastern borders of Dartmoor. Messrs D'Urban and Mathew, however, in their *Birds of Devon* (p. 155), express the opinion that the Kite was never so common in Devonshire, or any of the south-western counties, as it was formerly in the home counties and in other parts of England. The Gloucestershire naturalist above referred to has hinted at the cause of this :—

"Our copses present it with no enticing harbourage, and our culture scares it. In former years I was intimately acquainted with this bird, but its numbers seem greatly on the decline, having been destroyed or driven away to lonely places, or to the most extensive woodlands."

For "lonely places" we have to cross the Welsh

[1] On November 13, 1771, Gilbert White saw sixteen Fork-tailed Kites at once on the downs.

border, and it is some satisfaction to know that, in the midst of the daily persecution which attends the larger birds of prey, and some even of the smaller kinds, the Kite still finds a home in at least three of the Welsh counties, where so recently as 1892 and 1893 I was made acquainted with their nesting-places. I abstain, however, from naming even the counties, lest by so doing I should unwittingly hasten the disappearance of a species whose extirpation every true naturalist would deplore.

In 1822 the Kite was very numerous in Glamorganshire, where it used to breed regularly in Leekwith Wood, Cardiff, and in the Aberdare Valley, where Lord Aberdare had seen and counted as many as five-and-twenty Kites and Buzzards above the Duffryn Craig. In 1846 a young Kite taken from the nest at the Devil's Bridge in Cardiganshire lived in captivity until December 1873 (*Zoologist*, 1874).

In Scotland, the Glead, as it is there called, still "struggles for existence," and in three or four counties that might be named it still breeds annually in wild places, remote from the haunts of man. The late Duke of Argyll once saw as many as nine Kites on the wing at one time at Inveraray. In July 1876, being at Brighton, I called on Pratt, the bird-stuffer, and there saw two young Kites which were being preserved for the late Mr E. T. Booth, who had procured them either in Perthshire or Ross-shire. They were "branchers," and had they been allowed to live would soon have been able to fly well. They had nearly got rid of their down, but the tail was not yet forked. They may be seen in

the collection which was formed by Mr Booth in his beautiful gallery of British birds, in the Dyke Road, which, by his liberality, has since his death become the property of the Corporation of Brighton.

From what I have seen of the Kite in parts of France, Holland, Greece, and Thessaly, where at close quarters I have sometimes watched three or four on the wing at once, I am disposed to echo the opinion of the Gloucestershire naturalist in regard to it. Struck with its grand appearance on the wing, he described it as "the finest native bird that we possess, and all its deportment partakes of a dignity peculiar to itself, well becoming a denizen of the forest or the park." More's the pity that it should be now so scarce.

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